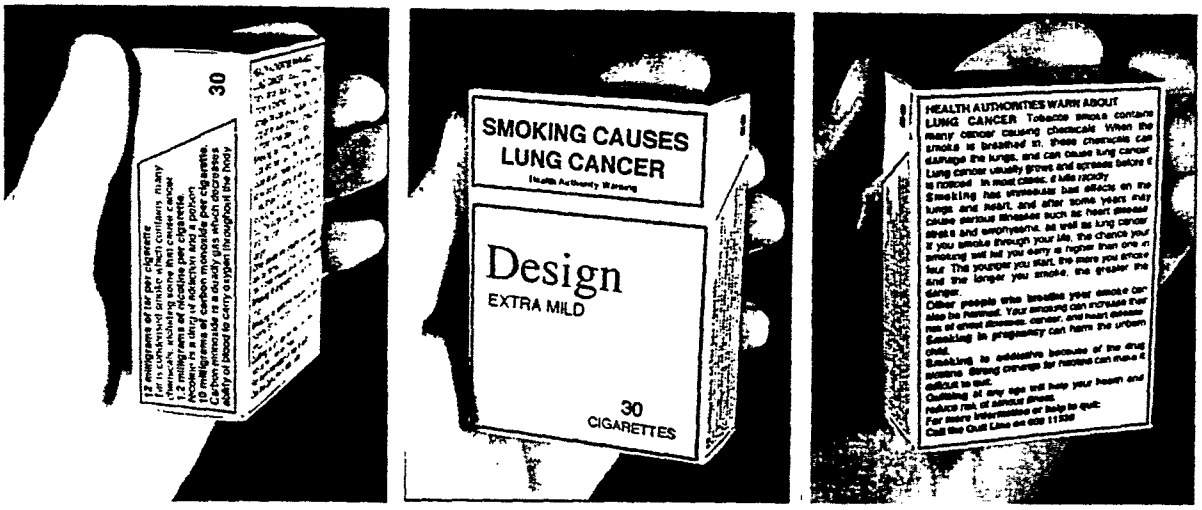

Prototype of a cigarette packet with warning labels recommended by the Centre for Behavioural Research in Cancer, Anti Cancer Council of Victoria, Australia

be included with specification of levels.

Health warnings about the consequences of smoking

The adverse health effects of tobacco smoking, the addictive nature of tobacco smoke, information to encourage and help addicted smokers wishing to quit, and the dangers of involuntary or passive smoking should all be effectively conveyed on the packaging of all tobacco products.

The specific recommendations supporting this set of general recommendations include:

- That a panel be set side covering not less than 25% of the surface area of the front of the pack for inclusion of a health warning, and that this "boxed" area have a clear border
- That this panel be at the top of the front of the pack
- That initially there be a set of 12 short, pithy health warnings covering: (*a*) general health effects, (*b*) specific disease risks, (*c*) passive smoking effects, (*d*) effects in pregnancy, (*e*) addiction, and (*f*) the benefits of quitting.
- That regulations require the following wordings:
  - *Smoking causes lung cancer*
  - *Smoking causes heart disease*
  - *Smoking causes emphysema*
  - *Smoking is a major cause of stroke*
  - *Smoking causes peripheral vascular disease*
  - *Smoking reduces your fitness*
  - *Smoking kills*
  - *Most smokers develop permanent lung damage*
  - *Your smoking can harm others*
  - *Smoking is addictive*
  - *Stopping smoking reduces your risk of serious disease*
  - *Smoking in pregnancy can harm the unborn child*
- That the back of the pack be given over entirely to the provision of more detailed health information about the harmful consequences of smoking
- That the panel on the back of the pack contain standard information on the following seven areas: (*a*) elaboration of front side warning (for instance, a paragraph explaining more about the nature of lung cancer and its relation to smoking), (*b*) overall health risks, (*c*) passive exposure risks, (*d*) dangers of smoking in pregnancy, (*e*) addictive nature of tobacco, (*f*) benefits of quitting, and (*g*) where to get help in quitting.

Plans have been developed to establish a national telephone network Quitline, the number for which will be included on the pack.

The box provides an example of a complete back of pack text. The first paragraph is specific to lung cancer and would match up to the front of pack warning, *Smoking causes lung cancer*. This text would occupy the entire reverse side of a standard pack of cigarettes.

Health authorities warn smoking can kill you

LUNG CANCER. Tobacco smoke contains many cancer-causing chemicals. When the smoke is breathed in, these chemicals can damage the lungs, and can cause cancer. Lung cancer is the most common cancer caused by smoking. Lung cancer usually grows and spreads before it is noticed. In most cases, it kills rapidly.

Smoking has immediate bad effects on the lungs and heart, and after some years may cause serious illnesses such as heart disease, stroke, and emphysema, as well as lung cancer. If you smoke through your life, the chance your smoking will kill you early is higher than one in four. The younger you start, the more you smoke and the longer you smoke, the greater the danger.

Other people who breathe your smoke can also be harmed. Your smoking can increase their risk of chest illnesses, cancer, and heart disease.

Smoking in pregnancy can harm the unborn child.

Smoking is addictive because of the drug nicotine.

Strong cravings for nicotine can make it difficult to quit.

Quitting at any age will help your health and reduce risk of serious illness.

For more information or help to quit:

Call the Quitline on 008 11538.

Implementation

All these recommendations are scheduled to come into force on 1 July 1993. Before that all states and territories will need to regulate in a uniform way as tobacco health warnings are subject to state legislation in Australia. The agreement of MCDS should ensure that this occurs, as it was agreed that only implementation, not the content of the recommendations, be the subject of discussions with the tobacco industry.

When implemented, Australia will have the strongest and most informative warning system for tobacco in the

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Source: https://www.industrydocuments.ucsf.edu/docs/rhhl0000

world. The use of the back of the pack to elaborate health risks, explanation of the dangers of the major harmful contents, and the provision of a Quitline number are all innovations.

The research conducted by Centre for Behavioural Research in Cancer both demonstrated the need for more effective labelling and provided some evidence that this package of measures is likely to act as a deterrent to young people taking up smoking and may assist intending quitters. Its impact will be enhanced if it is accompanied by strong and consistent policies directed at discouraging tobacco use. Australia has a good track record in this regard, so we might expect further declines in the prevalence of smoking in Australia as a result of this and other measures.

DAVID HILL
Anti Cancer Council of Victoria, Victoria, Australia

The full report is available from the Centre for Behavioural Research in Cancer, 1 Rathdowne Street, Carlton South, Victoria 3053, Australia, price $A30.

New director for US Office on Smoking and Health

The new director of the US Centers for Disease Control's Office on Smoking and Health (which was recently transferred from Rockville, Maryland, to Atlanta, Georgia) is Michael P Eriksen, ScD, formerly of the MD Anderson Cancer Center in Houston, Texas. Dr Eriksen is regarded as a soft spoken and effective coordinator of prevention programmes. Reviewing the 15th international cancer congress in Hamburg in 1990 for the *Cancer Bulletin* (12/90) of the MD Anderson Cancer Center, Dr Eriksen was clearly shaken by the presentation of British epidemiologist Richard Peto, who predicts a worldwide toll of 10 million deaths a year caused by tobacco by 2025. Alluding to the unethical disregard the United States shows towards the future health of developing nations as evidenced by its trade policies and the marketing tactics of its tobacco industry, Eriksen writes, "Although many of us are personally active in tobacco control efforts [in the United States], at international meetings we are often confronted about our federal policies that will certainly, as shown by Peto's projections, result in unequalled death and suffering in those countries least able to cope with the medical and social consequences of tobacco use." – AB

Virtual greed?

> Analysts at Shearson Lehman and Morgan Stanley repeated their "buy" recommendations on RJR Nabisco, based on a weakening in the price of the stock after the United States Surgeon General requested the company stop using the "Joe Camel" cartoon character in cigarette advertising.
> Stock trading report, *New York Times*, 11 March 1992

The term "virtual reality" has been coined to describe the next wave of computer simulated video games that create for the player a three dimensional illusion of being in the game itself. After reading the *New York Times*' report of March 11 on the previous day's trading on the New York Stock Exchange, I was moved to coin a new term: virtual greed. – AB

Essential resources

Tobacco Reporter, published monthly by Specialized Agricultural Publications Inc, PO Box 95075, Raleigh, NC 27690-2503, USA. Aggressive, illustrated international publication for the tobacco industry; a year's subscription is $65.

Smoking: Death, Disease, and Dollars. Massachusetts Department of Public Health, 150 Tremont Street, Boston, MA 02111, USA. November 1991. Not your usual health department document: gets to the heart of smoking-attributable costs.

Smoking Prevention: An A–Z of Useful Ideas. HEA Smoking Prevention Field Support Project, Bristol Polytechnic, Redland Hill, Bristol BSG 6UZ, United Kingdom. £1.50, September 1991. Written by Kate Woodhouse, designed by Sarah Siddall, produced by Cecilia Farren and Judith Watt – geniuses all. A hilarious jam packed pot-pourri of good clean fun and good dirty tricks. One of a series. See p 142.

From the Billboard to the Playground. A resumé of the academic research on the influence of advertising on children's smoking, by GB Hastings, PP Aitken, AM Mackintosh, Cancer Research Campaign, 2 Carlton House Terrace, London SW1Y 5AR, United Kingdom. A neat rebuttal to industry claims that the market for tobacco products is "mature."

GLOBALink, 1730 Rhode Island Avenue, NW, Suite 600, Washington, DC, 20036, USA. This electronic communications network established by the American Cancer Society and the Advocacy Institute reprints mass media stories on tobacco issues and provides an opportunity for health advocates to share views.

Tobacco Action Pack, a resource of the International Organisation of Consumers Unions' AGHAST (Action Groups to Halt Advertising and Sponsorship by Tobacco), PO Box 1045, 10830 Penang, Malaysia; edited by Marina Emmanuel. – AB

Tobacco on Trial: Reporting on Litigation and Other Tobacco Control Strategies. Published 10 times a year. Subscriptions $95 standard, $65 for public and academic libraries, $35 for smoking control activists and organisations and for the news media. Payment to *Tobacco on Trial*, Northeastern University School of Law, 400 Huntington Avenue, Boston, MA 02115, USA.

Ideas and items for News Analysis should be sent to Alan Blum, editor for news and commentary, at the address given on the inside front cover, or to Eric J Solberg, assistant news editor, at the same address.

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Tobacco Control 1992; 1: 95–101

Smoking behaviour and attitudes of medical students towards smoking and anti-smoking campaigns: a survey in 10 African and Middle Eastern Countries

Jean Francois Tessier, Paul P Fréour, Chakib Nejjari, Dominique Belougne, John W Crofton, for the Tobacco and Health Committee of the International Union Against Tuberculosis and Lung Disease

Abstract

Objective **To assess the behaviour, knowledge, and attitudes towards smoking of medical students in Africa and to stimulate interest in the problem among both students and their teachers.**

Design **As part of a global survey, first and final year medical students in one centre in each of five sub-Saharan African (southern Africa) and five North African and Middle Eastern countries (northern Africa) replied anonymously to a multiple choice questionnaire in French or English according to country.**

Subjects **87% of first year students and 84% of final year students participated in the survey. A total of 1564 replies were analysed, 875 from first year students and 689 from final year students. Women comprised 37% of the overall sample, but with considerable differences between countries.**

Results **In northern Africa the prevalence of daily smoking (both sexes combined) was 8% among first year students and 19% among final year students; in southern Africa the corresponding figures were 9% and 20%, respectively. For men the figures were 13% and 22%; for women, 2% and 6%. Combining daily with occasional smoking, overall figures for both sexes combined were 19% for the first year and 27% for the final year. 9% of male students were ex-smokers in northern Africa and 20% in southern Africa; for women the corresponding figures were 5% and 12%, respectively. A serious attempt to quit had been made by 53% of smokers; 49% thought that they would no longer smoke in five years' time. Over 80% of students thought smoking was harmful to health, but there was considerable underestimation of its causal role in a number of diseases – notably, oral, laryngeal, and bladder cancer; emphysema; coronary and peripheral arterial disease; and neonatal mortality. There were important defects both in knowledge and motivation regarding counselling patients to stop smoking. Only a minority appreciated the value of tobacco taxation in decreasing consumption.**

Conclusions **The proportion of daily smokers in male medical students was similar in Africa to that in Europe, previously reported, but in females the rate was much lower. As in Europe, overall there was much ignorance of smoking as a cause of specific diseases; lack of knowledge and motivation regarding counselling patients; and only a partial grasp of preventive measures. We hope that the survey will stimulate relevant improvements in medical education.**

Introduction

In recent years there has been increasing concern that the tobacco epidemic, fuelled by the marketing practices of multinational companies, is gaining momentum in countries of the Third World,[1–3] adding to their formidable burdens of malnutrition and communicable diseases. Health professionals in these countries are beginning to realise that anti-tobacco activity must have a place in their priorities.

The Tobacco and Health Committee of the International Union against Tuberculosis and Lung Disease (IUATLD), with the support of the World Health Organisation (WHO), has conducted a global survey of the behaviour, knowledge, and attitudes of medical students regarding tobacco. The study has covered more than 5000 students in 42 countries. The survey has yielded data which enable comparisons to be made between countries and medical schools and provide a baseline from which further progress can be measured. An important aim was to stimulate the interest of these future doctors and their teachers. Results from the African section of the survey are reported here.

A pilot study[4] in five countries and results from 14 European countries[5] and nine Asian countries[6] have already been published.

Subjects and methods

The survey covered a single medical school in each of five countries in North Africa and the Middle East (Algeria, Egypt, Kuwait, Morocco, Tunisia – summarised here as northern Africa) and five countries in sub-Saharan

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Source: https://www.industrydocuments.ucsf.edu/docs/rhhl0000

Africa (Benin, Kenya, Madagascar, Nigeria, Senegal – summarised here as southern Africa). To examine the possible effects of medical education, first and final year students were surveyed. Students answered a structural questionnaire (see appendix) adapted from one designed by WHO, in cooperation with the International Union against Cancer and the American Cancer Society[7]; the initial questionnaire was slightly modified after our pilot study.[4] The English or French version was used in this section of the survey.

The questionnaire was administered by a coordinator in each centre using whatever method was locally most convenient, usually a single session in a classroom. The coordinator was asked to ensure that there was no pressure on students as to the nature of their answers. The aim was to obtain questionnaires from all the students, but inevitably some were absent. Participation was 87% for first year and 84% for final year students.

To avoid bias by a single large centre, where the number of students for any one year in any one centre was substantially above 200, a random sample of 200 was analysed. As not all students answered all questions, there are slight variations among the totals in some of the tables. The analysis was carried out by l'Unité INSERM 330 and the Département d'Informatique of the University of Bordeaux II, France. The chi square test for significance was used for comparisons, either between two categories or for trends among more than two categories; 95% confidence intervals are given in the text where appropriate.

Ex-smokers were those who formerly smoked but no longer did so. Never smokers is self explanatory. Smokers were divided into those who smoked daily and those who smoked occasionally – that is, less than daily.

Results

DEMOGRAPHIC DETAILS

The total numbers analysed were 1564, 875 from first year students and 689 from final year students. Overall, women comprised 37% but there were considerable differences among countries (table 1) and between northern (46%) and southern Africa (28%) ($p < 0.001$). In northern Africa only 8% of students came from rural areas; in southern Africa 16% ($p < 0.001$). There was little difference in age between the two areas (mean 22(95% confidence interval 18 to 26) years and 23(18 to 28) years respectively.

Table 1 Demographic date for first and final year students combined by sex and country

Country	Sex (%)		Total No of students
	Male	Female	
Northern Africa:			
Algeria	57	43	179
Egypt	40	60	102
Kuwait	40	60	77
Morocco	63	37	200
Tunisia	55	45	199
Southern Africa:			
Benin	95	5	87
Kenya	78	22	188
Madagascar	55	45	200
Nigeria	78	22	200
Senegal	64	36	130
All countries	63	37	1562

PREVALENCE OF SMOKING

Table 2 gives the results for the two years combined by sex and by centre. In general the rates increased between the first and final years (though of course these were different cohorts): 8% to 19% for daily smoking (both sexes combined) in northern Africa and 9% to 20% in southern Africa. Combining daily with occasional smokers, overall figures were 19% for first year and 27% for final year students ($p < 0.007$).

For male daily smokers the rates for the first and final years were 13% and 22%, for occasional smokers, 14% and 13%. For women the equivalent rates were 2% and 6% for daily smokers and 6% and 4% for occasional smokers, but there was much variation among countries (table 2).

Most student smokers smoked filter tipped cigarettes. Northern African students smoked more cigarettes a day (11(4 to 18) compared with 7(1 to 13) in southern Africa, $p < 0.001$), and women smokers smoked less than men (6(1 to 11) compared with 9(4 to 14), $p < 0.001$).

Table 2 Smoking behaviour for first and final year students combined by sex and country

	Daily smokers (%)		Occasional smokers (%)		Ex-smokers (%)		Never smokers (%)		All students	
	M	F	M	F	M	F	M	F	M (n = 987)	F (n = 575)
Northern Africa:										
Algeria	33	4	14	5	14	3	39	88	102	77
Egypt	3	2	3	0	0	0	94	98	41	61
Kuwait	6	0	10	9	3	7	81	84	31	46
Morocco	18	0	14	0	11	9	57	91	125	75
Tunisia	28	7	11	10	7	6	54	77	109	90
All countries*	22	3	12	5	9	5	57	87	408	349
Southern Africa:										
Benin	8	0	5	0	24	33	63	67	83	4
Kenya	20	2	17	5	15	10	48	83	148	41
Madagascar	22	3	8	6	14	9	56	82	109	91
Nigeria	7	2	21	2	23	19	49	77	157	43
Senegal	14	8	17	11	30	13	39	68	83	47
All countries*	14	4	15	6	20	12	51	78	579	226

* $p < 0.001$ between figures for males and females for each smoking category.

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Source: https://www.industrydocuments.ucsf.edu/docs/rhhl0000

Table 3 Reasons why students themselves do not smoke, by smoking status, both years combined

	% Who "strongly agree"			
	Smokers (n = 351)	Ex-smokers (n = 196)	Never smokers (n = 984)	p value
1 Protect your health	70	79	76	< 0·03
2 Example children	52	59	56	NS
3 Example patients	47	52	55	NS
4 Self-discipline	47	71	66	< 0·001
5 Symptoms	39	37	40	NS
6 Discomfort	31	36	40	< 0·001
7 To save money	25	27	25	NS
8 Example adults	16	29	35	< 0·001
9 Example health workers	25	34	39	< 0·001
10 Pressure of colleagues	9	10	13	NS

* The question asked was, "How do you personally assess the importance of the reasons for not smoking yourself?"

QUITTING SMOKING

There was a notable proportion of ex-smokers, especially in southern Africa (table 2). Even among current smokers 53 % had made at least one serious attempt to quit, ranging from 35 % in Senegal to 68 % in Algeria. Moreover, 49 % thought that they would no longer be smoking in 5 years' time (ranging from 33 % in Egypt to 83 % in Benin).

REASONS FOR NOT SMOKING (TABLE 3)

Protection of the student's own health was the most frequent reason given for not smoking, followed, among never and ex-smokers, by self discipline. Personal rather than professional factors therefore predominated; nevertheless, setting a good example to children was listed by over half. Understandably, for most reasons the figures for smokers tended to be lower.

KNOWLEDGE OF THE DANGERS OF TOBACCO

The majority, whatever their smoking status, thought tobacco was dangerous to health: 89 % in northern Africa and 81 % in southern Africa.

KNOWLEDGE OF TOBACCO AS A MAJOR CAUSE OF SPECIFIC DISEASES

Table 4 indicates the percentage of first and final year students who considered tobacco to be a major cause of the listed diseases. There were important deficiencies in knowledge, especially about oral, laryngeal, and bladder cancer; pulmonary emphysema; coronary artery disease; peripheral vascular disease; and neonatal death. Among final year students the proportion of positive replies to "major cause" from different countries varied from 7 % to 50 % for emphysema, from 10 % to 60 % for coronary artery disease, and from 0 to 28 % for bladder cancer. For a number of diseases there was little improvement from the first to final year.

Table 4 Percentage answering "Yes" to the question, "Is cigarette smoking a major cause of these diseases?", all countries combined

	First year students (%) (n = 875)	Final year students (%) (n = 689)
Lung cancer	62	62
Chronic bronchitis	46	57
Oral cancer	27	26
Pulmonary emphysema	29	15
Laryngeal cancer	31	35
Coronary disease	22	24
Leukoplakia	19	22
Soft tissue lesion	16	13
Peripheral vascular disease	16	19
Neonatal death	13	7
Bladder cancer	5	10

ATTITUDES OF STUDENTS TO SMOKING IN PATIENTS

In response to the question, "In the following situations would you, as a future doctor, advise patients against smoking?" three situations were proposed, the students being asked, in reply, to choose between "often," "sometimes," "rarely," or "never." The overall percentage answering "often" is given by smoking status in table 5 and by country in table 6.

Situation 1 A patient presenting with a smoking related disease (if recognised by the student!). Almost all students claimed they would advise quitting smoking.

Situation 2 A patient himself raises the question of his smoking. The majority of final year students would advise him to quit.

Situation 3 A patient who is a smoker but has no symptoms or diagnosis of a smoking-related disease and does not himself raise the question of smoking. Only 31 % of final year students would intervene.

The responses were little affected by the student's smoking status, except for situation 3. Table 6 indicates that there was little difference among countries.

Table 5 Percentages of final year students answering "often" to the question, "In these three situations would you, as a future doctor, advise patients against smoking?"

Situation*	Smokers (n = 351)	Ex-smokers (%) (n = 196)	Never smokers (n = 984)
1	92	92	86
2	72	83	72
3	27	30	32

* See text for explanation.

Table 6 Percentages of final year students answering "often" to the question, "In these three situations would you, as a future doctor, advise patients against smoking?"

	Situation* (%)			Total No of students
	1	2	3	
Northern Africa:				
Algeria	95	77	29	179
Egypt	53	43	30	102
Kuwait	82	82	35	77
Morocco	94	84	41	200
Tunisia	92	82	32	199
Southern Africa:				
Benin	91	88	33	87
Kenya	91	77	26	188
Madagascar	87	64	24	200
Nigeria	95	81	40	200
Senegal	100	90	20	130
All countries	88	77	31	1562

* See text for explanations.

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Source: https://www.industrydocuments.ucsf.edu/docs/rhhl0000

Table 7 Student attitudes on the role of the doctor in smoking cessation and prevention by smoking status and curriculum year

	% Who "strongly agree"*						
	According to smoking status				According to year		
	Smokers (n = 351)	Ex-smokers (n = 196)	Never smokers (n = 984)	p value	First year (n = 875)	Final year (n = 689)	p value
It is the doctors' responsibility to convince people to stop smoking	49	58	61	< 0·001	57	58	NS
Smokers could stop if they wanted	53	60	59	NS	58	59	NS
Doctors should set a good example by not smoking	50	66	79	< 0·001	73	69	NS
Most people will not quit smoking even if their doctor tells them to	32	35	34	NS	34	34	NS
Doctors should be more active in speaking to lay groups about smoking	71	75	71	NS	71	73	NS
Doctors would be more likely to advise quitting if they knew a good approach	64	50	61	< 0·007	61	59	NS
Your current knowledge is sufficient as a basis to counsel on quitting	40	37	37	NS	32	45	< 0·001
At every contact you should dissuade a patient from smoking	53	55	59	NS	56	59	NS

* The exact wording of the statement was: "Indicate the extent to which you agree or disagree with each of the statements...."

THE DOCTOR AND PREVENTION OF TOBACCO-RELATED DISEASES

In posing the role of the doctor in prevention, the student was asked to state his or her degree of agreement with eight propositions. Table 7 indicates the percentage of students, according to smoking status and year of study, who replied "strongly agree." Only 45% of final year students thought that they had adequate knowledge to counsel patients on stopping smoking.

The answers to some questions were influenced by smoking status. In particular, as might be expected, fewer smokers thought the doctor should set a good example or had a responsibility to convince people to stop smoking. There was little change between years of study except in knowledge of counselling, which improved from 32% in the first year to 45% in the final year (with a range of 27–54% in different centres).

ATTITUDES TOWARDS LAWS AND REGULATIONS FOR CONTROLLING SMOKING

As before, the student was asked to state his degree of agreement or disagreement with a series of propositions. The percentage stating "strongly agree" is given by year and smoking status in table 8.

Overall, the great majority of students, whatever their smoking status, agreed that it should be illegal to sell cigarettes to children and that smoking should be restricted in hospitals and public places. On the other hand, significantly fewer smokers would ban tobacco advertising or increase the tax on tobacco. Taxation as a smoking deterrent attracted the least support, though it is one of the most effective ways of decreasing consumption.[8]

Discussion

The use of a standard protocol and a standard questionnaire should make results between countries comparable. There could, of course, have been misstatements, particularly about smoking behaviour. In a global study in many countries it was not practicable to use carbon monoxide or cotinine markers, and these have seldom been used in community studies. In a worldwide study the number of African countries we could cover had to be limited. However, the geographical distribution and the high participation rate suggests that the results may be reasonably representative.

In general the frequency of smoking in men was similar to that in European students.[5] For instance, in final year male students the proportion of daily smokers was 27% in northern Africa and 18% in southern Africa (22% overall), compared with 21% in Europe. Occasional smoking was 13% in northern Africa and 14% in southern Africa, compared with 4% in Europe.

The amount of smoking by women was very different in Europe and Africa. In the European survey smoking rates were almost ident-

Table 8 Student opinions on smoking control policies by smoking status and curriculum year

	% Who "strongly agree"*						
	According to smoking status				According to year		
	Smokers (n = 351)	Ex-smokers (n = 196)	Never smokers (n = 984)	p value	First year (n = 875)	Final year (n = 689)	p value
Health warning on cigarette package	69	72	69	NS	65	76	< 0·001
Complete ban on advertising	58	60	67	< 0·001	65	64	NS
Tobacco in public places restricted	80	82	84	NS	79	88	< 0·001
Price of tobacco increased	35	50	53	< 0·001	52	46	NS
Sale of tobacco to children prohibited	85	82	88	NS	87	87	NS
Smoking in hospital restricted	80	80	78	NS	79	79	NS

* The exact wording of the questions was: "A number of opinions have been expressed about how to reduce smoking through legislative action. Would you agree or disagree with the following opinions?"

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Source: https://www.industrydocuments.ucsf.edu/docs/rhhl0000

ical in the two sexes. In Africa, as in Asia,[6] the proportion of smokers was much lower in women: in both years combined only 3% of students were daily smokers in northern Africa and 4% in southern Africa.

Data for smoking in the general adult population in African countries are limited. Most are derived from small scale local studies and they may not differentiate between daily and occasional smoking. The following figures for smoking prevalence[9 10 11] may be compared with those for students in table 2: Tunisia males 58%, females 6%; Egypt 33% and 2%; Kuwait 52% and 12%; Morocco 60% and 20%[12]; Algeria 53% (mostly male)[13]; Senegal 44% and 33%; Nigeria 53% and 13%; Benin 28% (both sexes combined).[14] Overall, the prevalence of smoking in medical students seems to be less than in the general population of their countries. In general, reasons for not smoking were predominantly personal rather than professional (such as setting a good example).

It would be interesting to compare the smoking prevalence among medical students with the prevalence among doctors in the same countries. Figures are not available for most of the countries, but for Morocco a survey showed a rate for male doctors of 44% compared with 32% for medical students (daily plus occasional smoking) and for female doctors 22% compared with 0 in students.[15]

In general, ignorance of tobacco as a major cause of specific diseases was similar to that among European students.[5] For instance, it was cited as a major cause of pulmonary emphysema by only 15% of final year African students compared with 18% of European students. For cancer of the larynx the figures were 35% and 41%, respectively and for coronary artery disease, 24% and 29%. (The questionnaire was devised before smoking had been established as a cause of stroke and before environmental tobacco smoke had been established as a cause of lung cancer.)

As in Europe there was a low level of interest in preventive action with patients. Only 45% of African final year students thought that they were equipped to counsel patients on smoking (compared with 27% in Europe). Similarly 69% of African and 68% of European students would not advise patients to stop smoking if they had no smoking related symptoms and did not raise the question themselves. As in Europe, many African students were ignorant of the value of tobacco taxation in reducing consumption.[8]

Currently, there is considerable concern that the "tobacco pandemic" is spreading to Africa.[16-18] We hope that this survey will have achieved one of its aims if it stimulates the interest of medical students and their teachers in the problem. Interest may be further stimulated by publication of each country's results in its own national press.

The deficiencies in knowledge and skills noted above are similar to those we found in the European[5] and Asian[6] sections of our global survey. Such deficiencies in final year students must reflect a failure, on average, of medical education, though there was a variation among countries. Centres in the different countries will receive their own results and copies of this report for comparison. We hope this will lead, where necessary, to remedial action in medical education. In the case of our European survey a summary of results (and the revealed deficiencies in medical education)[5] has been circulated, jointly by the International Union against Tuberculosis and Lung Disease and the European Region of WHO, to the deans of all European medical schools, with a brief questionnaire on their curriculum's tobacco module and an inquiry about any proposed action. We hope to explore similar initiatives in Asia and Africa.

We give our sincere thanks to the coordinators in each medical school for their cooperation in meticulously carrying out the survey. These were Algeria: Professor M Khellaf (Constantine), Dr M Messadi (Anaba); Benin: Professor B Monteiro (Cotonou); Egypt: Professor S El 'Sayed (Cairo); Kenya: Dr P Wangai (Nairobi); Kuwait: Professor A M Karnik (Kuwait City); Madagascar: Dr A Razakamenana (Tananarive); Morocco: Professor M Bartal (Casablanca); Nigeria: Professor B O Onadeko, Dr A Awotedu (Ibadan); Senegal: Professor P A Kane (Dakar); Tunisia: Professor R El Gharbi, Professor A Chabou (Tunis). We acknowledge with gratitude the provision of facilities from the University of Bordeaux II, France, the collaboration of the Unité INSERM 330 and the Département d'Informatique de l'Université de Bordeaux II (Professor R Salamon); the technical help of Mrs S Redon, Assistante Ingénieur of INSERM, Bordeaux; and the secretarial help of Miss M A Audibert and Mrs E A Pretty. We are grateful for the support and a financial grant from WHO Geneva, and for generous grants from the Danish National Association against Tuberculosis and Lung Disease and the Chest, Heart and Stroke Association, Scotland.

Appendix

The following is a summary of the questions asked in the questionnaire.

Personal details

Age, sex, where lived before attending university (city, suburb, town, village).

Smoking status

Whether ever smoked; whether ever smoked for six months or more; whether now smoke daily (at least once a day), occasionally, or not at all. Type of cigarette, pipe, or cigar/cheroot currently smoked. Whether ever made a serious attempt to stop smoking. Probable smoking status five years from now.

Reasons for not smoking

How do you personally assess the following reasons for *not* smoking yourself? Possible answers of "high", "moderate", "low", or "none" to 10 items: symptoms; good example for health workers; to avoid discomfort to others nearby; save money; good example to others in social environment; good example to children; good example for patients; comply with pressure from professional colleagues; protect own health; self discipline.

Harm from smoking

Do you think smoking is harmful to your health? Choice of "strongly agree," "mildly agree," "don't know," "mildly disagree," "strongly disagree."

Smoking as a cause of diseases

Choice of whether smoking is a major or contributory cause, is associated with, has no association with, or

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"don't know" regarding: bladder cancer, coronary artery disease, lung cancer, chronic bronchitis, oral cancer, pulmonary emphysema, laryngeal cancer, peripheral vascular disease, leukoplakia of mouth/lip, any soft tissue lesion of mouth/lip, neonatal death.

Advising patients against smoking
Choice of "often", "sometimes," "seldom," "never" when patient (*a*) has symptoms/confirmed diagnosis of smoking related disease, (*b*) raises question of smoking himself, (*c*) is smoker but has no symptoms/diagnosis of smoking-related disease and does *not* raise the question of smoking.

Questions relevant to doctor-patient attitudes:
Choice of "strongly agree," "somewhat agree," "neither agree or disagree," "strongly disagree" to nine statements: "It is the doctor's responsibility to convince people to stop smoking"; "Most smokers could stop if they wanted to"; "It is annoying to be near a person who is smoking"; "Doctors should set a good example by not smoking"; "Most people will not give up smoking even if their doctor tells them to"; "Doctors should be more active than they have been in speaking to lay groups about smoking"; "Doctors would be more likely to advise people to quit smoking if they knew a good approach that really worked"; "Your current knowledge is sufficient as a basis for counselling patients who want to stop smoking"; "At every contact with a patient, where it would be natural to do so, you should dissuade him from smoking."

Reducing smoking through regulative/legislative action:
Choice of replies as in questions relevant to doctor-patient attitudes to proposals for health warnings on cigarette packets; complete ban on advertising of tobacco; restricted smoking in public places; sharp increase in price of tobacco (taxation); prohibiting tobacco sales to children; restricting smoking in hospitals to special areas; specific training of health professionals in how to support patients who want to stop smoking.

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Translations of abstract

Comportement tabagique et attitudes des étudiants en médecine face aux campagnes pour et contre le tabac: une enquête dans 10 pays africains et du Moyen-Orient

Jean Francois Tessier *et al*

Résumé

Objectif: Evaluer le comportement, la connaissance et les attitudes face au tabagisme des étudiants en médecine en Afrique et stimuler l'intérêt des étudiants et des enseignants pour cette question.
Méthode: Dans le cadre d'une enquête globale, des étudiants en médecine de première et de dernière année de chacun des cinq pays africains sub-sahariens (Afrique du sud) et des cinq pays d'Afrique du nord et du Moyen-Orient (Afrique du nord) ont répondu anonymement à un questionnaire à choix multiple en français ou en anglais selon le pays.
Sujets: 87 % des étudiants de première année et 84 % des étudiants de dernière année ont participé à l'enquête. 1564 réponses ont été analysées, 875 d'étudiants en première année et 689 en dernière année. Les femmes représentaient 37 % de l'échantillon global mais avec d'énormes différences entre les pays.
Résultats: En Afrique du nord la prévalence du tabagisme quotidien (les deux sexes confondus) était de 8 % parmi les étudiants de première année et 19 % parmi les étudiants de dernière année; en Afrique du sud, ces chiffres étaient respectivement de 9 % et 20 %. Pour les hommes les chiffres étaient de 13 % et 22 %; pour les femmes 2 % et 6 %. Les chiffres globaux pour les deux sexes, fumeurs occasionnels et réguliers confondus, étaient de 19 % pour la première année et 27 % pour la dernière année. 9 % des étudiants de sexe masculin étaient des ex-fumeurs en Afrique du nord, et 20 % en Afrique du sud; pour les femmes, ces chiffres étaient respectivement de 5 % et 12 %. 53 % des fumeurs ont sérieusement essayé d'arrêter de fumer; 49 % pensaient qu'ils ne fumeraient plus dans cinq ans. Plus de 80 % des étudiants pensaient que le tabagisme est mauvais pour la santé, mais ils sous-estimaient de beaucoup son rôle causal pour plusieurs maladies, dont notamment le cancer du larynx, de la bouche et de la vessie; l'emphysème; les maladies coronariennes et des artères périphériques; et la mortalité néonatale. Il y avait beaucoup de lacunes dans la connaissance et la motivation pour conseiller aux patients d'arrêter de fumer. Une minorité seulement reconnaissait l'importance de la taxation des produits du tabac dans la baisse de la consommation.
Conclusions: La proportion de fumeurs réguliers de sexe masculin était la même en Afrique qu'en Europe, mais le pourcentage était beaucoup plus faible chez les femmes. Comme c'est le cas en Europe, il y a globalement une grande ignorance du fait que le tabagisme cause certaines maladies spécifiques; un manque de connaissance et de motivation pour conseiller aux patients d'arrêter de fumer; et seulement une compréhension partielle des mesures préventives.

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Comportamientos de tabaquismo y actitudes de los estudiantes de medicina respecto del tabaquismo y las campañas contra el tabaquismo: encuesta realizada en 10 paises Africanos y del Medio Oriente

Jean Francois Tessier *et al*

Resumen

Objetivo: Evaluar el comportamiento, el conocimiento y las actitudes hacia tabaquismo de los estudiantes de medicina en Africa y estimular el interés en el problema tanto de los estudiantes como de sus profesores.

Diseño: Como parte de una encuesta global, los estudiantes de medicina del primero y del último año de un centro de estudios de cada uno de cinco paises al sur del Sahara (Africa meridional) y cinco paises de Africa del Norte y del Medio Oriente (Africa septentrional) respondieron en forma anónima a un cuestionario de selección múltiple en francés o inglés según el pais.

Sujetos: 87% de los estudiantes del primer año y 84% de los estudiantes del último año participaron en la encuesta. Se analizaron 1564 respuestas, 875 de los estudiantes del primer año y 689 de los estudiantes del último año. Las mujeres representaban el 37% de la muestra general, pero con considerables diferencias entre los paises.

Resultados: En Africa septentrional la prevalencia del tabaquismo cotidiano (en los dos sexos en conjunto) fue 8% entre los estudiantes del primer año y 19% entre los estudiantes del último año; en el Africa meridional, las cifras correspondientes fueron 9% y 20%, respectivamente. Para los hombres, las cifras fueron 13% y 22%; para las mujeres, 2% y 6%. Las cifras generales para los dos sexos de tabaquismo cotidiano y ocasional combinadas fueron 19% durante el primer año y 27% para el último año. En Africa septentrional, el 9% de los estudiantes masculinos eran ex fumadores y en Africa meridional, el 20%; las cifras correspondientes para las mujeres fueron el 5% y el 12%, respectivamente. Un 53% de los fumadores había intentado seriamente dejar de fumar; 49% de ellos creían que en un lapso de 5 ãnos ya no fumarían más. Si bien más del 80% de los estudiantes creían que el tabaquismo era nocivo para la salud, subestimaban enormemente su papel causal en varias enfermedades – en particular, el cáncer oral, laríngeo y vesical; el enfisema; enfermedad coronaria y vascular periférica; y la mortalidad neonatal. Se comprobaron defectos importantes tanto en el conocimiento como en la motivación en la orientación de los pacientes para que dejaran de fumar. Solo una minoría reconocía el impacto de la tributación al tabaco en la reducción del consumo.

Conclusiones: La proporción de fumadores cotidianos entre los estudiantes de medicina masculinos en Africa fue similar a la de Europa, si bien en las mujeres la tasa fue muy inferior.

Al igual que en Europa, en general existía un gran desconocimiento del papel del tabaquismo como causa de enfermedades específicas; falta de conocimiento y motivación en lo referente a la orientación de los pacientes, y solo una comprensión parcial de las medidas preventivas.

医学生吸烟行为及他们对反吸烟运动的态度
一项在 10个非洲和中东国家中进行的调查

佛朗克斯·塔塞　　国际防痨病肺病联盟的吸烟与健康委员会

研究目的：分析评价非洲的医学生吸烟行为及与吸烟有关的知识和态度，进而激发学生和教师对吸烟问题的兴趣。

研究设计：调查在五个南非和五个北非及中东国家的医疗中心进行，在每个研究中心，新入学的和将毕业的医学生用英文或法文，以不记名的方式填写多项选择问卷。

研究对象：87% 的新生和 84% 的毕业生参加了调查，共收集了 1564 份问卷，其中 875 份来源于新生，689 份来源于毕业生。女性占总调查人数的 37%，但在不同的国家间存在着很大的差异。

研究结果：在北非，新生和毕业生吸烟率（男女合计，每日吸烟）分别是 8% 和 19%；在南非相应的数字为 9% 和 20%。其中男性吸烟率分别为 13% 和 22%，而女性吸烟率分别为 2% 和 6%。在北非新生和毕业生的吸烟率（男女合计，每日吸＋偶尔吸）分别为 19% 和 27%。另外，在北非和南非分别有 9% 和 20% 的男性曾吸过烟；女性的相应数字分别为 5% 和 12%。有 53% 的吸烟者曾尝试戒烟，有 49% 的吸烟者计划在未来的五年内戒烟。80% 以上的学生知道吸烟危害健康，但他们显著低估了吸烟对某些疾病的致病作用，如口腔癌、咽喉癌、膀胱癌、肺气肿、冠心病、周围动脉血管疾病和新生儿死亡。大多数医学生缺乏劝阻病人吸烟的意识和动机，仅少数人知道到烟草税在降低烟草消费中的作用。

结论：非洲男性医学生每日吸烟率与欧洲的相似，但女性吸烟率则显著的低。与欧洲的情形一样，医学生普遍忽视吸烟对特定疾病的致病作用，缺乏对病人进行戒烟咨询的知识和动机，对如何预防疾病知之甚少。

（中国健康教育研究所烟草控制与疾病预防研究室　潘学雷译）

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Prevalence of smoking in Bahrain

Randah R Hamadeh, Klim McPherson, Richard Doll

Abstract

Objective **To determine (*a*) the prevalence of smoking and its distribution by demographic characteristics in the general population of Bahrain; (*b*) the types and pattern of smoking; and (*c*) smoking trends.**

Design **Analysis of smoking and demographic questions from a 4·5% sample of households. The survey was conducted between September 1981 and February 1983. A two stage sampling design was used, the block being the first stage unit and the household the second stage unit.**

Setting **A national morbidity survey in Bahrain, Arabian Gulf.**

Subjects **A total of 9282 adults aged 15 and over.**

Results **The prevalence of smoking was 33·1% among men and 9·2% among women. Non-Bahraini men had the highest prevalence of smoking (40·4%) followed by Bahraini men (30·6%), Bahraini women (9·5%), and non-Bahraini women (7·9%). Cigarette smoking was the most popular type of smoking followed by the waterpipe. The latter was more prevalent among Bahraini women than men, but has begun to decrease in both sexes.**

Conclusion **The prevalence of smoking among men and women in Bahrain was lower than in most of the developed and developing countries. However, a secular trend of increasing cigarette smoking was seen.**

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Introduction

The state of Bahrain is an Arab Moslem independent state composed of an archipelago of 36 islands. It is located in the Arabian Gulf, with the Kingdom of Saudi Arabia to the west and Qatar to the east. The total population of Bahrain according to the 1981 census is 350798. About two thirds of the population are Bahraini nationals and the remaining third are non-Bahraini residents, who are mostly Asians.[1]

Data on the prevalence of smoking in the Arabian Gulf region are limited to special groups (M Yassin, unpublished data).[2–7] Available evidence indicates that smoking is popular among physicians and other professionals,[3,4] secondary school boys,[1,7] and university students (M Yassin, unpublished data).[2,5]

Population based figures on smoking in the Arabian Gulf are available only for Kuwait (NA Al-Naqeeb, unpublished data),[8] where 51·8% of men and 12·1% of women aged 20 years and above are reported to smoke.[8]

The exact date of tobacco introduction to Bahrain is uncertain. However, it can be assumed that it was brought to Bahrain at the beginning of the eighteenth century, similar to Saudi Arabia and other countries in the region.[9] All forms of tobacco are imported in Bahrain as there is no cultivation of tobacco or manufacture of tobacco products.

The objectives of this study were (*a*) to determine the prevalence of smoking and its distribution by demographic characteristics in the general population of Bahrain, (*b*) to determine the types and pattern of smoking, and (*c*) to study smoking trends.

Methods

A national morbidity survey based on a 4·5% sample of total households (58798) in Bahrain was conducted between September 1981 and February 1983 by the Ministry of Health, with a response rate of 99·5%. The national morbidity survey is the first and only survey to be done in Bahrain and the Gulf States to date.

Bahrain is divided into 11 regions, 10 of which are inhabited. These regions in turn are divided into area blocks containing varying number of households.

A two stage sampling design was used, the block being the first stage unit and the household the second stage unit. At the first stage a stratified random sample of blocks was chosen using the regions as strata; in the second stage a systematic sample of households was chosen from the selected blocks. The blocks were selected with probability proportional to the number of households contained in them.[10]

At the time of designing the survey smoking was just one of the variables included and no special emphasis was given to it. Hence, smoking related questions (appendix) along with the others were put to the head of the household or eldest person in the presence of adult members of the family and were intended to identify current smokers in the household and their type and frequency of smoking. Data on ex-smokers, however, were not collected. Information on smoking was obtained for all the 4785 men and 4497 women who were aged 15 years and over. Cigarette smokers were considered to be regular light smokers if they smoked less than one packet a day and regular heavy smokers if they smoked one packet or more daily; otherwise they were classified as occasional smokers (less than one cigarette a day). Waterpipe smokers were classified as

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Table 1 Prevalence of smoking (%) by age, sex, and nationality in the national morbidity survey

Age (years)	Bahraini		Non-Bahraini		Total	
	Male (n = 3537)	Female (n = 3548)	Male (n = 1248)	Female (n = 949)	Male (n = 4785)	Female (n = 4497)
15–19	8·1	1·2	5·7	0·0	7·8	1·1
20–29	32·6	3·9	39·8	5·1	34·4	4·2
30–39	42·1	12·2	45·8	10·2	43·8	11·5
40–49	41·2	23·6	41·5	10·9	41·3	20·8
50–59	44·4	22·1	46·9	17·6	45·0	21·6
60–69	40·5	16·9	45·5	12·5	40·9	16·7
≥ 70	28·9	23·3	28·6	50·0	28·8	24·8
Total	30·6	9·5	40·4	7·9	33·1	9·2

Table 2 Numbers (percentages) of smokers in the national morbidity survey by type of smoking, sex, and nationality

Type of smoking	Bahraini		Non-Bahraini	
	Male	Female	Male	Female
Smoker:				
Cigarette	981 (27·7)	19 (0·5)	481 (38·5)	68 (7·2)
Waterpipe	69 (2·0)	315 (8·9)	4 (0·3)	5 (0·5)
Cigar or pipe	3 (0·1)	0 (0·0)	11 (0·9)	0 (0·0)
Mixed*	29 (0·8)	3 (0·1)	8 (0·6)	2 (0·2)
Non-smoker	2455 (69·4)	3211 (90·5)	744 (59·6)	874 (92·1)
Total	3537 (100·0)	3548 (100·0)	1248 (100·0)	949 (100·0)

* Only one was a cigarette and pipe smoker, the rest were cigarette and waterpipe smokers.

regular smokers if they smoked daily and as occasional smokers otherwise.

Trends in the prevalence of smoking for the past 40 years were extrapolated by using the data on prevalence and duration of smoking of current smokers and adjusting for unknown durations in each age group. It was assumed that the proportion of non-smokers in any age group in whom duration of smoking was unknown was equal to that of those who had known duration.

Results

The population distribution of those aged 15 years and over was similar in terms of age, sex, and nationality in the national morbidity survey and the 1981 census.

The prevalence of smoking at ages 15 years and over was 33·1% among men and 9·2% among women in Bahrain (table 1). The highest percentage was in non-Bahraini men overall (40·4%) and in those aged 50–59 years (46·9%). The percentage of Bahraini male and female smokers was 30·6% and 9·5%, respectively. The highest frequency of smoking for Bahraini men (44·4%) was in those aged 50–59 and for Bahraini females in those aged 40–49 (23·6%) and 70 and over (23·3%).

Table 2 shows that cigarette smoking including cigarettes mixed with other types of smoking was more prevalent among non-Bahraini men (39·2%), followed by Bahraini men (28·6%), non-Bahraini women (7·4%), and Bahraini women (0·6%).

Waterpipe smoking was more widespread among the Bahraini women (9·0%) than in the other groups. Pipe and cigar smoking were not common in Bahrain, especially among the Bahraini.

Forty four per cent of the cigarette smokers were regular light smokers (< 1 packet a day). A third of the Bahraini male smokers were heavy smokers (≥ 1 packet a day) compared with a fifth of the non-Bahraini male cigarette smokers. Half of the waterpipe smokers were regular (daily) smokers and the other half occasional (less than daily) smokers (table 3).

The majority of smokers started smoking in the age groups 10–19 years (43·3%) and 20–29 (44·5%). The age at starting smoking was unknown for 29·0% of the smokers (table 4). The average age at starting to smoke was similar for cigarette smokers (21·3 years) and for waterpipe smokers (23·3 years) in all groups except in Bahraini men, in whom the mean ages at starting were respectively 21·0 years and 31·0 years.

The data on duration of smoking were available for 78·4% of the cigarette and 38·2% of the waterpipe smokers. These showed that both cigarette and waterpipe smoking have been prevalent in Bahrain for at least the past 50 years. Throughout this period the prevalence of cigarette smoking was found to have increased in all age groups while the prevalence of waterpipe smoking decreased (table 5). In young women the prevalence of waterpipe smoking is decreasing, but in older women it has become more frequent. Cigarette smoking by women began only in the 1970s and is still very uncommon.

Table 3 Numbers (percentages) of cigarette and waterpipe smokers in the national morbidity survey by frequency of smoking, nationality, and sex

Frequency of smoking	Cigarette smokers				Waterpipe smokers			
	Bahraini		Non-Bahraini		Bahraini		Non-Bahraini	
	Male	Female	Male	Female	Male	Female	Male	Female
Non-smoker	2527 (71·4)	3526 (99·4)	759 (60·8)	879 (92·6)	3440 (97·2)	3230 (91·0)	1236 (99·0)	942 (99·3)
Smoker:								
Occasional	242 (6·8)	11 (0·3)	154 (12·3)	28 (3·0)	46 (1·3)	156 (4·4)	9 (0·7)	5 (0·5)
Regular light	441 (12·5)	2 (0·1)	231 (18·5)	31 (3·3)	51 (1·4)	160 (4·5)	3 (0·3)	2 (0·2)
Regular heavy	317 (9·0)	6 (0·2)	103 (8·3)	8 (0·8)	—	0 (0·0)	0 (0·0)	0 (0·0)
Undetermined	10 (0·3)	3 (0·1)	1 (0·1)	3 (0·3)	0 (0·0)	2 (0·1)	0 (0·0)	0 (0·0)
Total	3537 (100·0)	3548 (100·0)	1248 (100·0)	949 (100·0)	3537 (100·0)	3548 (100·0)	1248 (100·0)	949 (100·0)

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Table 4 Numbers (percentages) of all smokers in the national morbidity survey by age and age at starting smoking

Age (years)	Age at starting smoking (years)				Total	% of smokers with age at starting smoking unknown
	10–19	20–29	30–39	⩾ 40		
15–19	60 (100·0)	0 (0·0)	0 (0·0)	0 (0·0)	60 (100·0)	29·4
20–29	261 (60·4)	171 (39·6)	0 (0·0)	0 (0·0)	432 (100·0)	23·3
30–39	144 (38·2)	207 (54·9)	26 (6·9)	0 (0·0)	377 (100·0)	26·7
40–49	79 (28·4)	140 (50·4)	48 (17·3)	11 (4·0)	278 (100·0)	29·3
50–59	41 (24·3)	78 (46·2)	32 (18·9)	18 (10·7)	169 (100·0)	34·0
60–69	19 (25·7)	26 (35·1)	10 (13·5)	19 (25·7)	74 (100·0)	38·3
⩾ 70	10 (34·5)	9 (31·0)	0 (0·0)	10 (34·5)	29 (100·0)	49·1
Total	614 (43·3)	631 (44·5)	116 (8·2)	58 (4·1)	1419 (100·0)	29·0

Table 5 Prevalence of smoking (%) among Bahraini men and women by type of smoking (1940–1980)

Age (years)	Men					Women				
	1980s	1970s	1960s	1950s	1940s	1980s	1970s	1960s	1950s	1940s
					All types					
20–29	32·6	32·6	29·0	25·0	12·7	3·9	10·4	16·2	16·2	14·1
30–39	42·1	38·1	36·3	26·1		12·2	20·7	19·9	16·9	
40–49	41·2	43·0	36·3			23·6	20·9	16·9		
50–59	44·4	38·8				21·9	16·9			
60–69	40·5					16·9				
					Cigarettes					
20–29	32·1	33·0	27·0	23·1	14·0	0·6	0·7	0·0	0·0	0·0
30–39	41·5	35·6	32·0	22·2		0·7	0·7	0·0	0·0	
40–49	38·6	37·0	28·0			1·4	0·0	0·0		
50–59	38·2	29·7				0·3	0·0			
60–69	30·9					0·0				
					Waterpipe					
20–29	1·0	0·5	2·8	0·0	3·6	3·4	9·7	14·8	16·5	0·0
30–39	1·0	2·8	5·7	8·1		11·7	19·0	20·3	16·9	
40–49	2·8	7·7	11·4			22·3	20·3	16·9		
50–59	8·3	11·4				21·5	16·9			
60–69	12·7					19·9				

About 80% of the cigarette smokers provided data at interview on the brand smoked. Dunhill, Rothmans, Kent, Silk Cut, and Marlboro King Size, were the five brands most commonly smoked. Analysis of cigarette brand smoked by age showed that Dunhill was the most popular brand in all age groups. Rothmans and Silk Cut, however, were less favoured by the young in comparison with Kent and Marlboro. Marlboro was the most favoured brand among those aged 15–19 years.

Single men had a lower prevalence of smoking (12·9%) than all people who had ever been married (23·1–29·4%). The prevalence of smoking among the university degree holders (27·7%) was almost equal to that of the illiterate (26·2%). The proportion of smokers was lowest among those with an intermediate (15·6%) and secondary (15·1%) education. Income support recipients (43·5%) and labourers (43·0%) had a higher prevalence of smoking than professionals (26·4%) and clerical workers (24·9%).

Discussion

The prevalence of smoking in men and women in Bahrain is generally lower than that in their counterparts in many developed[11] and developing countries (M Khlat and HK Armenian, unpublished report).[8,12] The proportion of adult male cigarette smokers in Bahrain is 31·3% and 37·6% in those aged 15 and above and 20 and above, respectively. The corresponding figures in the United Kingdom,[13] Australia,[14] and Canada[15] in the early 1980s in those aged 15 and above ranged from 37·0% to 41·0%; those in Lebanon (M Khlat and HK Armenian, unpublished report), Kuwait,[8] and Japan[16] ranged from 46·2% to 70·2% in people of 20 and over. However, in the United States[17] the figure (38·0%) is almost equal to that of Bahrain (37·6%). On the other hand, the proportion of female smokers in Bahrain is much lower than that in industrial countries apart from Japan.[13–17]

However, the prevalence of smoking among females in Bahrain exceeds that of most non-Arab developing countries that have available data but is lower than the rate for Arab females (M Khlat and HK Armenian, unpublished report).[8,12]

A comparison with the smoking rates of Kuwait (NA Al-Naqeeb, unpublished data),[8] a country with similar religious, ethnic, and cultural habits, suggests that the prevalence of smoking is lower in Bahrain. Among those aged 20 years and above the prevalence of smoking in males of Bahrain (39·4%) is lower than that of their Kuwaiti counterparts (51·8%), in spite of the fact that the Kuwaiti data were restricted to cigarette smoking only. The proportion of female smokers in that age group is almost similar. However, a large difference results when cigarette smoking alone is considered. The percentage of female cigarette smokers aged 20 years and above in Bahrain drops to 2·4% compared with 12·1% in Kuwait. Further analysis by nationality and smoking prevalence between the two countries shows that smoking is more prevalent in Kuwait (NA Al-Naqeeb, unpublished data)

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particularly among females. The proportion of cigarette smokers in those aged 20 and above is 0·8% in Bahraini females compared with 7·5% in Kuwaiti females. The corresponding percentages among males are 35·8% and 42·7%.

The difference between the prevalence of smoking in Bahrain and in Kuwait may, however, be due to underestimation in the Bahrain data because of the method used to obtain data. The head of the household was usually the interviewee in the Bahrain study and the head might not mention a female cigarette smoker or a young male smoker because of its negative social connotation.

Moreover, the interviewee might not be aware that a female member of the family smokes as she would do so in private. The Kuwaiti data on the other hand were based on a personal interview as part of a cross sectional study.[8]

The proportion of smokers who started smoking during their teenage (36·6%) is lower than that reported for Egypt (52·9%)[18] and Lebanon (69·0%).[19]

From the data on duration of smoking, it is evident that cigarette smoking has been practised among males in Bahrain for over 50 years. It is possible that it was imported into Bahrain shortly after being taken up in developed countries at the turn of the twentieth century.[20–22] On the other hand, cigarette smoking by Bahraini females was delayed until the 1970s. In contrast, waterpipe smoking has been popular in the country much longer than cigarettes, as tobacco smoking in waterpipes was probably practised as early as the eighteenth century in Bahrain as in neighbouring countries.[22,23]

The prevalence of smoking has been almost stable in all age groups in Bahrain for the past 50 years. But further analysis by type of smoking shows that smoking of cigarettes has increased and that of waterpipes has decreased, particularly in the young. Because data on ex-smokers were not collected, the trend in cigarette smoking has to be interpreted cautiously. However, there is no reason to believe that the proportion of ex-smokers varied during this period of time as serious efforts to educate the public of the harmful effects of smoking and legislative measures to control smoking only began in 1979.[10]

It is worth noting that Dunhill, although the leading brand smoked in Bahrain, is not among the five most popular brands in most of the countries that have published data, apart from Cyprus.[21] However, Rothmans, Silk Cut, and Marlboro are also among the most preferred brands in industrial countries.[25,26]

The relatively high proportion of smokers among the university degree holders (27·7%) and its similarity to that of the illiterate (26·2%) is contrary to what has been reported for industrialised countries.[26,27] Smoking among professionals was found to be 26·4% in contrast to the results of a recent study on smoking among physicians, journalists, and teachers in Bahrain where the proportions of smokers were 60·1%, 77·4%, and 80·6%, respectively.[6] However, the response rate in the latter study was only 49·2%.

We conclude that about a third of the men in Bahrain smoke and that there has been a secular trend of increasing cigarette smoking. Knowledge of the risks associated with smoking has not yet brought about any decrease in its prevalence in Bahrain.

We are grateful to the Bahrain Ministry of Health and to Drs Rashid Fuleifel and Ali Matar in particular for their support and assistance. We acknowledge all those who contributed in the national morbidity survey, particularly Drs Haroutune Armenian, Huda Zurayk, Salam Simaan, and Haifa Nabali. We also thank ASH (Action on Smoking and Health) and War on Want in the United Kingdom for allowing us to use their library facilities.

Appendix

Smoking related questions in the national morbidity survey

1 Does anyone in this household smoke cigarettes?
  If yes: How many cigarettes does he/she smoke per day?
  What brand of cigarettes does he/she smoke?
  At what age did he/she start smoking?
2 Does anyone in this household smoke hubble bubble [waterpipe]?
  If yes: How much does he/she smoke per day?
  At what age did he/she start smoking?

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Translations of abstract

La prévalence du tabagisme au Bahreïn

Randah R Hamadeh *et al*

Résumé

Objectif: Déterminer (*a*) la prévalence du tabagisme et sa répartition par caractéristiques démographiques dans la population globale du Bahreïn; (*b*) les types et les modèles de consommation; et (*c*) les tendances tabagiques.

Méthode: Analyse des habitudes tabagiques et des facteurs démographiques d'un échantillon de 4,5 % de ménages. L'étude a été réalisée entre septembre 1981 et février 1983. L'échantillonage a été fait en deux stades, le groupe étant l'unité du premier stade et le ménage l'unité du deuxième stade.

Cadre: Une étude nationale sur la morbidité au Bahreïn, Golfe d'Arabie.

Sujets: 9282 adultes agés de 15 ans et plus.

Résultats: La prévalence du tabagisme était de 33,1 % chez les hommes et de 9,2 % chez les femmes. Le pourcentage de fumeurs était le plus élévé chez les hommes non-originaires du Bahreïn (40,4 %), suivi par les hommes Bahreïni (30,6 %), les femmes Bahreïni (9,5 %) et les femmes non-originaires de Bahreïn (7,9 %). La consommation de cigarettes était la forme la plus populaire du tabagisme suivi par la pipe à eau. Celle-ci était plus répandue parmi les femmes Bahreïni que parmi les hommes mais elle a toutefois commencé à diminuer parmi les deux sexes.

Conclusion: La prévalence du tabagisme parmi les hommes et les femmes au Bahreïn était moins élévée que dans la plupart des pays développés ou en voie de développement. Cependant, on constante que la consommation de cigarettes a tendance à augmenter.

Prevalencia de tabaquismo en Bahrein

Randah R Hamadeh *et al*

Resumen

Objetivo: Determinar (*a*) la prevalencia del tabaquismo en la población general de Bahrein y su distribución según características demográficas; (*b*) los tipos y la modalidad del tabaquismo; y (*c*) las tendencias de tabaquismo.

Diseño: Análisis del tabaquismo y preguntas demográficas a partir de una muestra del 4,5 % de los hogares. La encuesta se realizó entre septiembre de 1981 y febrero de 1983. Se empleó un diseño de muestreo en dos etapas: la manzana de casas se consideró como unidad de la primera etapa y el hogar, como unidad de la segunda.

Marco: Encuesta nacional de morbilidad en Bahrein, Golfo de Arabia.

Sujetos: Un total de 9282 adultos de 15 y más años de edad.

Resultados: La prevalencia del tabaquismo fue de 33,1 % entre los hombres y 9,2 % entre las mujeres. La prevalencia más alta (40,4 %) se observó en los hombres no originarios de Bahrein, seguida por las correspondientes a los hombres nacionales de Bahrein (30,6 %), las mujeres de Bahrein (9,5 %) y las mujeres no oriundas de Bahrein (7,9 %). El fumar cigarrillos fue el tipo más popular de tabaquismo, seguido por la pipa. La prevalencia de esta última fue más alta entre las mujeres de Bahrein que entre los hombres, si bien su uso por los dos sexos ha comenzado a disminuir.

Conclusión: La prevalencia de tabaquismo en los hombres y mujeres de Bahrein fue menor que en la mayoría de los países desarrollados y en vias de desarrollo. Sin embargo, se observa una tendencia al creciente consumo de cigarrillos.

巴林的吸烟率

兰德·汉姆德

研究目的：确定 1) 在巴林的不同人群中吸烟率的分布情况；2) 常见的烟草种类和吸烟方式；3) 吸烟率的变化趋势。

研究设计：调查于 1981 年 9 月至 1983 年 2 月之间进行，本研究采用二阶段抽样调查设计，第一阶段的基本单元是街区，第二阶段的基本单元是家庭，共有 4.5% 的家庭被调查，调查内容包括吸烟情况及某些人口学问题。

抽样范围：巴林全国疾病发病率调查时所规定的人群

研究对象：9282 名 15 岁以上的成年人

研究结果：男性吸烟率为 33.1%，而女性吸烟率为 9.2%，非巴林籍男性吸烟率最高 (40.4%)，其次巴林男性 (30.6%)，巴林女性 (9.5%)，非巴林籍女性 (7.9%)。烟草种类主要为卷烟，其次为水烟。在巴林，女性吸烟较男性更为普遍。但近年来，吸水烟的人越来越少。

结论：巴林男女吸烟率低于多数的发达和不发达国家的吸烟率，但是巴林的吸烟率逐年呈上升趋势。(中国健康教育研究所烟草控制与疾病预防研究室 潘学雷译)

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Regional trends in cigarette smoking behaviour in the United States

Stephen E Marcus, John P Pierce, Gary A Giovino, Joel C Kleinman, Thomas E Novotny

Abstract

Objective **To examine trends in cigarette smoking behaviour by region of the United States from 1965 to 1987.**

Design **Survey.**

Setting **US population.**

Participants **Random population based samples (9000 to 89000) of adults aged ⩾ 20 years from 12 national health interview surveys.**

Main outcome measures **Cigarette smoking prevalence, initiation, and cessation.**

Results **Prevalence declined markedly in all four regions over time. The magnitude of the declines varied significantly among the regions; it was highest in the northeast and the west and lowest in the south. Some of these differences can be explained by differences in the magnitude of the changes in initiation and quitting among the regions. The south had the smallest decline in initiation and the smallest increase in quitting while the northeast had the greatest decline in initiation and the greatest increase in quitting. Differences in education explained only some of these regional differences. In both education groups (no college education and some college education) smoking behaviour changed the most in the northeast and the west, and changed the least in the south. However, these differences were only significant in the no college group. Moreover, smoking behaviour changed more in the higher education group than in the lower education group in all four regions.**

Conclusions **The public health community needs to intensify its anti-smoking efforts in the south, particularly for those who have not attended college. Monitoring geographical variations in smoking behaviour in other parts of the world would help identify high risk areas where smoking behaviour is changing slowly or not changing and would increase the effectiveness of local tobacco control programmes.**

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Introduction

Patterns of cigarette smoking in a society are known to be influenced by numerous environmental forces.[1] Given that these forces are likely to vary among different regions of a country, one way to examine the impact of the environment on tobacco use is to study regional variations in smoking behaviour.

Recent national and state surveys have indicated that adult smoking prevalence in the United States varies markedly across states.[2–5] The 1985 current population survey showed that the percentage of smokers (⩾ 16 years old) varied from 15% in Utah to 35% in Nevada.[2] In 1985 smoking prevalence was highest in the south (30%) and lowest in the west (25%).[2] Data from the 1988 behavioral risk factor surveillance system[3] also showed geographical variation in smoking patterns – percentages of current adult smokers (⩾ 18 years old) ranged from 18% in Utah to 38% in Kentucky. None of these studies, however, examined trends in regional smoking behaviour.

Therefore, in this study we examined regional trends in the prevalence, initiation, and cessation of cigarette smoking in the United States between 1965 and 1987. We assessed whether the time trends in smoking behaviour in the four regions of the United States are sufficiently different so as to be a good model for studying the impact of environmental influences on smoking behaviour.

Methods

DATA SOURCES

The National Center for Health Statistics, through the national health interview survey has collected standardised information on cigarette smoking behaviour in 12 separate, random population surveys between 1965 and 1987. (Surveys were conducted in 1965, 1966, 1970, 1974, 1976, 1977, 1978, 1979, 1980, 1983, 1985, and 1987.) Details of the national health interview survey methods, which have been modified once per decade, have been presented previously.[6–9] During our study period two major changes occurred in sampling methodology. Firstly, before 1974 the national health interview survey asked respondents to report smoking information on all members in their households. Because information about smoking status (current, former, or never smoker) collected from proxy family members has been shown to be valid,[10 11] we maintained these survey years in the study. Secondly, the modifications to sampling design for the 1985–7 surveys include oversampling of black people to produce more precise estimates for this population subgroup. Since the estimates presented are weighted to reflect the popu-

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lation in the United States these modifications have been taken into account in our analyses.

STUDY POPULATION

Because the minimum age of respondents varied across survey years, we restricted the study population to adults aged 20 years and over, as in previously published papers.[9 12 13] In addition, occasional smokers – at most 3% of the total sample available from each survey – were deleted from the analyses because this group was not uniformly defined. In some survey years the supplemental questionnaire on tobacco use was administered only to a subsample of the population surveyed in the national health interview survey. Therefore, sample size ranges between 9000 and 89000 across survey years.

VARIABLE DEFINITIONS

Smoking behaviour (see appendix)

An ever smoker was defined as a person who had smoked at least 100 cigarettes in his or her life. A current smoker was an ever smoker who reported smoking regularly at the time of the survey; a former smoker was an ever smoker not smoking at the time of the survey. Smoking prevalence in the 20–24 year age group is used as a proxy for smoking initiation.[9 12] We discussed limitations of this proxy in several previous papers.[9 12] The quit ratio is defined as the proportion of ever smokers who are former smokers at the time of the survey.[14]

Region

The Bureau of the Census has divided the United States into four geographical regions: northeast, northcentral, south, and west (appendix). The national health interview survey draws representative samples from each of these regions.[6–8] One previously cited report showed that states with both the highest and the lowest smoking prevalence were in the same region,[2] suggesting the value of subregional analyses. However, it was not possible to further examine trends in smoking behaviour using a more detailed geographical breakdown owing to small sample sizes.

Education

In a previous paper we showed different trends in smoking behaviour across educational levels.[12] Because there are also significant differences in education among the regions, we examined the role of education in explaining regional variations in smoking behaviour. We also showed that educational level could be collapsed, with only minimal loss of information, into two categories: people who attended college ($>$ 12 years of education) and people who did not attend college ($\leqslant$ 12 years).[12] Therefore, we derived education specific estimates of smoking prevalence, initiation, and the quit ratio for each survey year.

STATISTICAL ANALYSIS

We weighted all data to reflect the United States population and to account for other design features of the particular survey. Data from all years were standardised by age to the 1985 United States population (using the five age groups: 20–29; 30–39; 40–49; 50–59; $\geqslant$ 60) to control for changes in the age structure over time. We used linear regression (SAS PROC REG)[15] to model trends in the three measures of smoking behaviour over the period of the study. The year of the survey – that is, time – was the independent variable in all models. These analyses were identical to those used in previous papers.[9 12 13] In addition, we used analysis of variance (ANOVA) (SAS PROC GLM with CLASS REGION statement)[15] to rest for overall regional differences in trend. We entered a REGION*YEAR interaction term into these ANOVA models to test whether or not, as a group, the estimated slopes or rates of changes in smoking behaviour were significantly different from one another.

For the overall analyses separate regression models were run for each region of the country for each measure of smoking behaviour. Then we ran education specific models – that is, four separate regional models for each smoking measure and for each level of education. In addition, ANOVA models containing main effects and a REGION*YEAR interaction term were run for the overall study population and for each education subgroup of the population.

We used r^2 to measure the percentage of variation in smoking behaviour explained by each regression model. In a sense, this statistic is a measure of the strength of the linear relation between the predictor variable(s) and smoking behaviour.[16]

Given the large variation in sample size across surveys (from 9000 to 89000), the regression assumption of homoscedasticity does not hold. Therefore, all regressions used the method of weighted least squares to deal with variance heterogeneity; the weight is the reciprocal of the standard error for each survey.[16]

Results

SMOKING PREVALENCE

Trends in age adjusted smoking prevalence for the four regions from 1965 to 1987 showed a marked decline in smoking prevalence in all regions of the country (table 1). However, the magnitude of the declines varied significantly among the regions ($p < 0{\cdot}01$); it was highest in the northeast and the west (the total decrease from 1965 to 1987 was approximately 15 percentage points), followed by the northcentral (11 percentage points), and lowest in the south (8 percentage points) (table 1). As a result of its slow decline, the south moved from the lowest to the highest smoking prevalence between 1965 and 1987.

SMOKING INITIATION

Trends in initiation showed a marked decline

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in the initiation of smoking in all four regions between 1965 and 1987 (table 1). We again found significant variation in the magnitude of these declines among the regions ($p = 0.03$). The decline in initiation was highest in the northeast, followed by the northcentral, the west, and the south (table 1).

QUIT RATIO

Age adjusted quit ratios markedly increased in each region between 1965 and 1987 (table 1), with significant variation seen among the regions ($p < 0.01$). The increase was highest in the northeast, followed by the west, the northcentral, and the south (table 1). There was little regional variation in quit ratios in 1965, but the differing trends resulted in large differences by 1987.

...1 Predicted values from regression models of smoking measures by region (US ...ation, ages ≥ 20, 1965–87). Values are percentages unless stated otherwise

Region	1965	1987	Trend (% points) (95% confidence interval)		r^2
			Prevalence		
Northeast	43	28	−15 (−16 to −14)	$p < 0.01$	0.97
Northcentral	41	30	−11 (−12 to −10)		0.93
South	40	32	−8 (−9 to −7)		0.92
West	42	27	−15 (−16 to −14)		0.97
			Initiation		
Northeast	51	30	−21 (−23 to −19)	$p = 0.03$	0.90
Northcentral	48	31	−17 (−19 to −15)		0.87
South	44	34	−11 (−14 to −8)		0.64
West	44	28	−16 (−18 to 14)		0.84
			Quit ratio		
Northeast	28	47	+19 (18 to 20)	$p < 0.01$	0.95
Northcentral	29	43	+15 (13 to 17)		0.90
South	29	40	+11 (10 to 12)		0.94
West	31	48	+17 (16 to 18)		0.96

Source: National health interview surveys, 1965–87.

Table 2 Predicted values from regression models of smoking measures by education ... region (US population, ages ≥ 20, 1965–87). Values are percentages unless stated ...rwise

Region	1965	1987	Trend (% points) (95% confidence interval)		r^2
			Prevalence		
No college:					
Northeast	45	34	−10 (−11 to −9)	$p < 0.01$	0.92
Northcentral	43	36	−6 (−7 to −5)		0.74
South	41	37	−4 (−5 to −3)		0.58
West	45	34	−11 (−12 to −10)		0.97
Some college:					
Northeast	39	20	−19 (−20 to −18)	$p = 0.13$	0.95
Northcentral	36	22	−15 (−17 to −13)		0.85
South	37	24	−14 (−15 to −13)		0.93
West	35	20	−15 (−16 to −14)		0.92
			Initiation		
No college:					
Northeast	54	42	−12 (−16 to −8)	$p = 0.04$	0.52
Northcentral	52	45	−7 (−9 to −5)		0.49
South	46	43	−4 (−7 to −1)		0.13
West	52	37	−15 (−17 to −13)		0.84
Some college:					
Northeast	42	14	−28 (−31 to −25)	$p = 0.08$	0.90
Northcentral	39	12	−28 (−32 to −24)		0.80
South	39	18	−21 (−23 to −19)		0.89
West	31	14	−17 (−20 to −14)		0.75
			Quit ratio		
No college:					
Northeast	26	41	+16 (15 to 17)	$p < 0.01$	0.92
Northcentral	27	40	+12 (10 to 14)		0.83
South	28	36	+8 (7 to 9)		0.82
West	28	42	+13 (12 to 14)		0.95
Some college:					
Northeast	36	56	+20 (18 to 22)	$p = 0.44$	0.90
Northcentral	36	52	+16 (14 to 18)		0.84
South	34	51	+16 (15 to 17)		0.94
West	37	55	+18 (16 to 20)		0.91

Source: National health interview surveys, 1965–87.

DIFFERENCES BY EDUCATIONAL LEVEL

The regions differ in the educational level of their populations. For example, in 1987, the proportion who had attended at least some college was 46% in the west, 39% in the northeast, and 36% in the northcentral and in the south. Because education varies among the regions and smoking behaviour trends vary by education,[12] education specific analyses were carried out. We modelled the three measures of smoking behaviour in the population within each of the two levels of education using linear regression analysis.

PREVALENCE STRATIFIED BY EDUCATION

For both education groups, we found marked declines in age adjusted smoking prevalence in all four regions from 1965 to 1987 (table 2). For those with no college education, the magnitude of these declines varied significantly among the regions ($p < 0.01$). Prevalence declined more in the west and the northeast than in the northcentral and the south (table 2). As seen before in the overall sample, the south moved from the lowest to the highest smoking prevalence between 1965 and 1987 owing to its slow decline.

For those with some college education the magnitude of the declines in prevalence among the regions was not found to be significantly different ($p = 0.13$), due in part to the smaller number of people who had attended college. However, prevalence seemed to decline more over time in the northeast than in the other three regions (table 2).

Regardless of region, smoking prevalence declined more in people with some college education than in those with no college education. Regional declines in prevalence ranged from 4 to 11 percentage points in those with no college education and from 14 to 19 percentage points in those with some (table 2).

INITIATION STRATIFIED BY EDUCATION

We found marked regional declines from 1965 to 1987 in smoking initiation in both education groups (table 2). For those without college education these declines varied significantly among the regions ($p = 0.04$) – from a high of 15 percentage points in the west to a low of 4 percentage points in the south.

For those who had attended college regional variation in the declines in initiation was marginally significant ($p = 0.08$) (table 2). However, it seems that initiation declined more in the northeast and the northcentral regions than in the south and the west.

Moreover, for three of the four regions smoking initiation declined substantially more for those with some college education than for those with none (table 2). Initiation declined 17 to 28 percentage points in those with some college education compared with 4 to 15 percentage points in those with no college education. In the west, however, the magnitude of the declines in initiation was similar across educational levels, being 17 percentage points in those with some college education

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and 15 in those with none. However, the west started the period with an unusually low initiation rate among the higher education group in 1965.

QUIT RATIO STRATIFIED BY EDUCATION

Trends in age adjusted quit ratios show marked increases in all four regions for both education groups (table 2). In the lower education group the increases varied significantly in magnitude among the regions ($p < 0.01$). The quit ratio increased the most in the northeast (16 percentage points) and the least in the south (8 percentage points); the increase was intermediate in the west and the northcentral (13 and 12 percentage points, respectively).

In the higher education group we did not find significant regional variation in the magnitude of the increases in the quit ratio from 1965 to 1987 ($p = 0.44$) (table 2). The increases were quite similar among the regions.

Except in the south, the quit ratio showed smaller educational differences over time than either smoking prevalence or initiation (table 2). In the south the magnitude of the quit ratio increase in those with some college education (16 percentage points) was twice the magnitude of this increase in those with no college education (8 percentage points).

Discussion

We used data from 12 national health interview surveys carried out between 1965 and 1987 to identify changes in three measures of smoking behaviour by region of the United States. These data show that significant differences in trends in prevalence, initiation, and quitting have occurred among the four major regions of the United States.

Smoking prevalence declined in all four regions from 1965 to 1987, but the magnitude of the declines varied significantly among the regions; it was lowest in the south and highest in the northeast and west. Some of these differences can be explained by differences in the magnitude of the declines in smoking initiation and of the increases in quitting among the regions. The south had the smallest decline in initiation and the smallest increase in quitting while the northeast had the greatest decline in initiation and the greatest increase in quitting.

Many reasons may explain why the four regions of the country exhibit different patterns of smoking behaviour. One explanation may relate to differences in tobacco production among the regions. More tobacco is grown in the south than in the other regions.[17] Several studies have shown a positive relation between the degree of family involvement in tobacco production and the use of tobacco products in adolescents.[18–20] Other research has shown the effects of self interest on opinions about public smoking restrictions and taxation.[21,22] This may partially explain why disincentives to smoking, such as excise taxes on cigarettes[23] and restrictions on where smoking may occur,[1] are considerably weaker in the south.

Migration between the regions and immigration into the United States during the 22 year period of this study may have affected our findings. However, no data are available to address these issues, and given their complexity, we cannot give an opinion about the overall effect of either immigration or migration patterns. For example, the effects of immigration can be varied and depend on many factors, such as the smoking behaviour in the countries of origin and the degree of acculturation of the immigrants.

Current smoking behaviour may be underreported owing to growing social disapproval. This underreporting could vary among the regions and account for some of our findings. However, previous research found no apparent increase in the underreporting of cigarette smoking over time.[24]

Sociodemographics other than age, such as race, gender, or income, might explain some of the regional differences in smoking behaviour. However, we believe that controlling for education would also probably control for a considerable part of any race effect and much of any income effect. Moreover, in balancing the need for valid and reliable models with the added complexity of the analyses and risks of overcontrolling, we decided to adjust only for age and examine the role of education in explaining regional patterns of smoking behaviour. We examined education because previous research showed education to be the most consistent predictor of smoking behaviour in the United States.[12]

Education specific analyses showed that differences in the educational profiles among the regions accounted for only some of the differences in smoking patterns. In both education groups smoking behaviour changed the most in the northeast and the west and the least in the south. However, these regional differences were statistically significant only in those with no college education; they were not significant in the higher education group. Moreover, we found that smoking behaviour changed more from 1965 to 1987 in the higher education group than in the lower education group in all four regions. The one exception was similar declines in initiation among education groups in the west. These results suggest that whereas the lower education group in the south was not participating fully in the secular trends in smoking behaviour occurring in the rest of the United States, the higher education group in this region was doing so to a much greater extent.

In addition to education, other cultural or social environmental forces probably vary across the regions and affect smoking behaviour. For example, differences in smoking patterns may be partially explained by differences in social influence[25,26] among regions and education groups. Communities that have higher proportions of their populations attending college will have fewer smokers and higher levels of social influence against smoking. Therefore, in the west, where almost half of the population attends college the prevalence of smokers is the lowest and the

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social pressures against starting to smoke will be more pervasive. These pervasive social influences may be the reason for the similarity in the magnitude of the declines in initiation across education groups in the west.

A more general explanation for these differences in smoking patterns can be derived from the diffusion of innovations literature.[27 28] According to the diffusion hypothesis, smoking behaviour diffuses into and out of society in a predictable pattern – the proportion of people who smoke in society increases, reaches a peak, and starts to decline. This decline will be slow at first and then enters a rapid linear phase before finally slowing to an asymptote. Thus, the decline will follow an S shaped curve. Regional differences either in the points in time when the diffusion process started or in the rate of progression through the process might account for some of the differences in smoking patterns that we found in this study.

If these different regional trends in smoking behaviour continue, particularly among the lesser educated, they will lead to important differences in smoking related morbidity and mortality.[29–33] To reduce these differences the public health community should intensify its anti-smoking efforts in the south, particularly for those who have not attended college. Without this increased intervention, linear projections to the year 2000 (table 3) show that the south will fall farther behind the other regions, especially among those in the lower education group. Moreover, the rates of decline in prevalence seen between 1965 and 1987 will have to increase, particularly in the south and northcentral regions, if the year 2000 health objectives on tobacco use for the United States[34] are to be met. One of these objectives calls for reducing smoking prevalence among those aged 20 and older to 15% in the overall population and to 18% among those with a high school education or less.

Examining geographical variation in outcome is a traditional epidemiological approach to generating aetiological hypotheses and identifying high risk populations or areas for intervention. Our analyses have shown that there are important regional differences in smoking behaviour in the United States. In more heterogeneous societies where there are greater language, cultural, and political differences, such as across the countries of Europe, we would expect even greater geographical variation. Therefore, further such research should be encouraged in other parts of the world. This research could examine variations in smoking behaviour across different nations or continents or across different geopolitical areas within individual countries.

Table 3 Linear projections to the year 2000 of smoking prevalence (%) by region, education, and overall (US population, ages ≥ 20)

Region	No college	Some college	Overall
Northeast	28	9	19
Northcentral	32	13	24
South	35	16	27
West	27	11	19

These studies could also correlate geographical variations with the extent of family or community involvement in tobacco production. The positive relation between such involvement and smoking behaviour, found in studies conducted in the United States,[18–20] is worth exploring further with data from other countries.

Given the limitations of cross sectional data – in particular, temporal ambiguity – research designed to collect longitudinal data would increase the ability to make causal inferences. Ongoing surveillance systems, including repeated cross sectional surveys, are an excellent way to identify high risk areas where smoking behaviour is changing slowly or not changing and to increase the effectiveness of local tobacco control programmes. For example, variations could be examined across states or counties in the United States, since this is the level at which many of the tobacco policy changes – in clean indoor air, minors' access to tobacco, and workplace smoking policies – have been taking place.[1] Studies using such longitudinal data could then examine the effect of variations in anti-smoking policies or legislation on geographic patterns of smoking behaviour.[1 35]

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Appendix

SMOKING BEHAVIOUR

We derived the three measures of smoking behaviour from responses to two questions. The wording of the first was essentially the same across surveys: "Have you smoked at least one hundred cigarettes during your entire life?" (1965–70); "Have you smoked at least 100 cigarettes in your life?" (1983); and "Have you smoked at least 100 cigarettes in your entire life?" (all remaining years). The second question was "Do you smoke cigarettes now?" in all 12 surveys.

REGION

Northeast

Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

Northcentral

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.

South

Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.

West

Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

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Translations of abstract

Tendances régionales dans le comportement tabagique aux Etats-Unis

Stephen E Marcus *et al*

Résumé

Objectif: Examiner les tendances dans les comportements tabagiques par région aux Etats-Unis de 1965 à 1987.
Méthode: Enquête.
Contexte: Population des Etats-Unis.
Sujets: Echantillons d'adultes, pris au hasard dans la population, âgés de 20 ans (9000 à 89000) ayant participé à 12 enquêtes nationales de santé.
Base d'évaluation: Prévalence du tabagisme (cigarette), de l'initiation, et de la cessation.
Résultats: La prévalence a rapidement baissé au cours du temps dans les quatres régions. L'amplitude de la baisse varie beaucoup entre les régions, elle est la plus forte dans le nord-est et l'ouest et la plus faible dans le sud. Certaines de ces différences peuvent s'expliquer par les différences entre l'amplitude des changements dans l'initiation et la cessation entre les régions. Le sud a la baisse la plus faible pour l'initiation et l'augmentation la plus faible pour la cessation alors que le nord-est a la plus grande baisse pour l'initiation et la plus grande augmentation pour la cessation. Les différences d'éducation n'expliquent que partiellement ces différences régionales. Dans les deux groupes d'éducation (pas de formation universitaire ou une certaine formation universitaire) le comportement a le plus changé dans le nord-est et l'ouest, et il a le moins changé dans le sud. Ces différences n'étaient cependant significatives que dans le groupe de personnes n'ayant pas de formation universitaire. De plus, dans les quatres régions, le comportement tabagique a plus changé dans le groupe de personnes ayant un niveau d'études plus élevé que dans le groupe de personnes ayant un niveau d'études inférieur.
Conclusions: Les organisations de santé public doit intensifier leurs efforts anti-tabac dans le sud, en particulier auprès de ceux qui n'ont pas de formation universitaire. Suivre les variations géographiques des comportements tabagiques dans d'autres parties du monde aiderait à identifier les zones à haut risque, dans lesquelles le comportement tabagique évolue lentement ou n'évolue pas du tout, et d'améliorer l'efficacité des programmes locaux de prévention du tabagisme.

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Tendencias regionales en el comportamiento de fumar cigarrillos en los Estados Unidos

Stephen E Marcus *et al*

Resumen

Objetivo: Examiner las tendencias en el comportamiento de fumar cigarrillos en las distintas regiones de los Estados Unidos desde 1965 a 1987.

Diseño: Encuesta.

Marco: La población de EUA.

Participantes: Muestras aleatorias de la población (9000 a 89.000) de adultos de 20 años tomadas de 12 encuestas nacionales basadas en entrevistas sobre el estado de salud.

Principales evaluaciones obtenidas: Prevalencia del tabaquismo y de iniciación y cese de ese hábito.

Resultados: Con el transcurso del tiempo la prevalencia cayó notablemente en las cuatro regiones.

La magnitud de la caída varió significativamente según las regiones; fue más pronunciada en el nordeste y el oeste y mínima en el sur. Estas variaciones se explican en parte por las diferencias entre las regiones en lo que respecta a la magnitud de los cambios en la iniciación y el cese del tabaquismo. La caída más pequeña en la iniciación y el aumento más pequeño en el cese ocurrieron en el sur, mientras en el nordeste se observaron la mayor caída en la iniciación y el aumento mayor en el cese del tabaquismo.

Las diferencias en el nivel de educación explican solo en parte estas diferencias regionales. En los dos grupos según el nivel de educación (sin educación universitaria o con alguna educación universitaria) la modificación máxima del comportamiento se produjo en el nordeste y el oeste y la mínima, en el sur. Sin embargo estas diferencias fueron significativas solo en el grupo sin educación universitaria.

Además, en las cuatro regiones el comportamiento en materia de tabaquismo cambió más en el grupo con el mayor grado de educación que en el grupo con menos educación.

Conclusiones: La comunidad de salud pública tiene que intensificar sus esfuerzos contra el tabaquismo en el sur, en particular entre los que no han recebido educación universitaria.

La observación de las variaciones geográficas en el comportamiento del tabaquismo en otras partes del mundo ayudaría a identificar las áreas de alto riesgo donde dicho comportamiento está cambiando lentamente, o no se modifica, y a aumentar la efectividad de los programas locales de lucha contra el tabaco.

美国吸烟行为的地区性趋势

斯帝芬．马库斯等

目标： 调查从 1965 年— 1987 年美国吸烟行为的地区性趋势

设计： 随机抽样调查

调查对象： 从 12 项全国健康采访调查中，随机抽出 9000 到 89,000 二十周岁成年人

调查主要内容： 卷烟吸烟率、新增加吸烟者情况、戒烟情况

结果： 四个地区的吸烟率下降显著，地区间下降幅度有明显差异，北部和西部下降幅度最大，南部最少。这些区别中有些是由于各地区新增加吸烟者数量以及戒烟者数量的不同而造成的。美国南部地区新增加吸烟者最多而戒烟者又最少。东北地区新增加吸烟者最少，并且戒烟者最多，受教育水平也是地区间差别原因之一，但影响不大，两组（受国高等教育的人和未受过高等教育的人）中行为改变率在北部和西部最高，而南部地区最低。但是这类差别只在未受过高等教育的人中间比较显著。总而言之，受教育水较高的人群中的吸烟行为改变大于受教育水平较低的人群吸烟行为变化。

结论： 公共卫生界需要加强在美国南部的反吸烟教育，特别是要加强对未受过高等教育的人群的教育。对世界其他地区吸烟行为的变化进行监测将有助于发现吸烟率下降缓慢或没有变化的高危地区，进而提高本地烟草控制项目的效果。

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Tobacco Control 1992; 1: 114–117.

Illegal cigarette sales to children in South Australia

Melanie Wakefield, John Carrangis, David Wilson, Christopher Reynolds

Abstract

Objective **To assess how easily cigarettes could be purchased by children from retail stores and vending machines in South Australia.**

Design **Ten children aged between 12 and 14 years visited 98 stores and 29 vending machines with the intention of purchasing cigarettes.**

Main outcome measures **Percentage of successful attempts to purchase cigarettes.**

Results **Children succeeded in purchasing cigarettes at nearly half of the stores and all of the vending machines. This occurred despite the fact that approved sales to minors notices were displayed at almost two thirds of the stores and three quarters of the vending machines.**

Conclusion **More effective retail controls are required to prevent the relatively easy purchase of cigarettes by children in South Australia.**

Introduction

The majority of new smokers are drawn from the ranks of children, at a time when they are considered ill equipped to make lifelong decisions. Rates of smoking in children of 15 years approximate to those in adults, although most adults smoke daily and more heavily.[1] Thus, as Hill *et al* relate, it seems clear that "by the time children are ready to leave school, the stage is set for the rapid acquisition of adult smoking prevalence and consumption levels."[1] Although it is now well established that tobacco smoking is addictive,[2] children frequently underestimate the likelihood of their continued tobacco use.[3,4] Experimentation with cigarettes often leads to dependency, resulting in many teenagers eventually becoming long term smokers.[5,6]

Efforts to reduce the burden of illness attributable to tobacco use therefore focus heavily on measures to prevent the uptake of smoking in childhood and adolescence. However, faced with the powerful marketing and promotion of cigarettes by the tobacco industry, efforts to educate children about the dangers of tobacco use may be compromised.[7] Even where there are controls on cigarette advertising and promotion, there is a concern that the ease with which children are able to obtain cigarettes may limit the efficacy and credibility of educational messages.

There are few consumer items other than tobacco that can be purchased in so man different locations at any time of the day o week. Availability is a key element in th successful marketing of any product and is crucial factor in both creating and maintainin addiction to cigarettes. The link betwee accessibility and consumption has been con vincingly shown in the case of alcohol[8] and, a Kaplan concludes,[9] the more available drug are "the higher the rate of use – and c addiction." Kaplan cites many examples t confirm this principle, arguing that the read availability of tobacco increases the amoun smoked by current smokers and makes it muc more difficult for them to stop and easier fc children to start.

For most of this century South Australia ha had legislation prohibiting the sale or supply c cigarettes to children aged under 16 years, wit the maximum penalty having been increased t $A1000 in 1986 (section 11, South Australia Tobacco Products Act 1986). In additior there is a requirement that retailers display a approved warning notice informing consumer of this law. Other Australian states var according to the legal age (in Western Australi and New South Wales the legal age is 18 years and the penalty attracted by infringement (i Western Australia the maximum penalty wa recently increased to $A5000 for an individu and $A20 000 for a corporation; in New Sout Wales the penalty is now $A5000). There is n Australian state which prohibits the possessio of cigarettes by children.

Although these laws are well intentionec observation of the large number of under ag regular smokers suggests that they may be ; limited utility in reducing the access of chi dren to tobacco, despite the fact that programme of education of retailers has bee undertaken in at least two states, Sout Australia and Victoria, clearly articulating th requirements of the legislation and its max mum penalty for infringement. This stuc therefore sought to assess formally the ea with which children were able to purcha cigarettes by over the counter sales an vending machines.

Methods

The methods guiding this survey were base on those in similar studies in the United Stat in which children tried to purchase cigarett from a variety of different retail outlets.[10,11]

For over the counter sales a random samp of 98 tobacco retail outlets in metropolita

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Adelaide was selected from the telephone directory using a table of random numbers. The sample included delicatessens (45), petrol stations (16), supermarkets (23), tobacconists (2), shops selling wines and spirits (6), and newsagents (6), with proportionate representation according to their distribution in the marketplace. This sample size was sufficient to provide a reliable estimate of the success rate of attempted cigarette purchase by children. Based on an estimate that 50% of purchase attempts at a total of 1935 of these types of retail outlets listed in the Adelaide metropolitan area telephone book would be successful and with the 95% confidence interval set at 40% to 60%, the required sample size for a simple random sample was 91.[12]

With the consent of their parents four boys and six girls, aged between 12 and 14 years, visited these locations in January 1991 to attempt to purchase cigarettes. The children were invited to be involved in the study through their participation in a youth group, coordinated by one of the authors (JC). The children were therefore not randomly selected: however, none of these children were regular smokers and no attempt was made to recruit children who looked older than their chronological age.

Retail outlets involving over the counter attempts were grouped into convenient geographical areas and assigned to eight of the children. Only one purchase attempt was made at each retail outlet. Children were driven to each preselected retail outlet by an adult, who remained in the car out of view of the retailer. The child entered the store, approached the counter, and asked the retailer for a packet of cigarettes (boys asked for *Peter Jackson* and girls for *Alpine*). The children were instructed to be honest about their age if the retailer asked, thus allowing an opportunity for a sale not to be made. If a child was sold a packet of cigarettes, he or she immediately left the store and returned to the car.

In addition to whether the purchase attempt was successful, the child also reported on the sex and approximate age of the retailer (< 30, $\geqslant 30$), whether other customers were present in the store, and whether the child was asked for his or her age or for whom the cigarettes were intended. After the purchase attempt the supervising adult entered the store to determine whether an approved warning sign about sales to children was displayed.

For vending machine sales a sample of 29 retail outlets in metropolitan Adelaide was randomly selected from the telephone directory. Purchase attempts were assigned by convenient geographical area to two of the boys who had participated in the over the counter component of the study (aged 12 and 14) and two girls who had not been involved previously (aged 13 and 14). The sample included hotels (15), recreation centres (6), restaurants and cafes (5), and transport stations (3). Each preselected retail outlet was telephoned several days before the purchases being attempted to ascertain whether a vending machine was on the premises. Replacement was made for any retail outlet that did not possess a vending machine.

Success rate of children's attempts to buy cigarettes in South Australia by type of retail outlet

Retail outlet	*No of attempts*	*No (%) of successes*
Over the counter sales:		
Delicatessen	45	18 (40)
Supermarket	23	13 (57)
Petrol station	16	10 (63)
Newsagency	6	4 (57)
Tobacconist	2	—
Shops selling wines and spirits	6	—
Total	98	45 (46)
Vending machines	29	29 (100)

Results

OVER THE COUNTER SALES

Cigarettes were purchased by children from 45 (46%) of the 98 retail outlets that sold tobacco over the counter. Purchase success varied from 67% at newsagencies to 40% at delicatessens, although these differences were not significant. Children were refused purchase at all tobacconists and shops selling wines and spirits. Where children were successful in purchasing cigarettes, they were not asked their age or for whom the cigarettes were intended. Of the 53 cases when children were refused sale, 83% were asked their age and 17% were asked for whom the cigarettes were intended (table).

Only 63·3% of retail outlets displayed the warning notice about sales to children. However, purchase success was unrelated to whether the sign was displayed. The presence of other people in the store and the sex and age of the vendor made no difference to whether a child was sold cigarettes.

In this study older children had a higher purchase success, with 56·9% of attempts by 14 year olds being successful, compared with 15·4% of 12 year olds ($\chi^2_1 = 11{\cdot}7$, $p = 0{\cdot}0006$). Sex was also related to purchase success, with 25·0% of attempts by boys and 69·6% of attempts by girls resulting in success ($\chi^2_1 = 17{\cdot}8$, $p = 0{\cdot}02$).

VENDING MACHINES

Cigarettes were purchased from all of the 29 vending machines by the children. Irrespective of where vending machines were located – in public places or in places with restricted access to children – purchase was possible on every occasion it was attempted. In all, 21 (72·4%) vending machines were posted with approved warning notices about sales to children.

Discussion

This survey confirms that children are able to purchase cigarettes, despite the existence of legislation aimed at preventing this from occurring. In almost one out of every two attempts children were able to purchase cigarettes successfully over the counter. From their own experience and that of their friends,

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the children involved in the survey believed that this success rate would probably have been higher if they had concealed their actual age or had indicated that the cigarettes were for a parent. Furthermore, although many of the cigarette vending machines in this survey were situated in places with traditionally restricted access to children, such as hotel bars, children were able to purchase cigarettes at these locations without hindrance on every occasion that they tried.

Other data from South Australia show that many children bought their first packet of cigarettes when they were as young as 8 years of age.[13] Furthermore, recent South Australian figures indicate that, among schoolchildren aged 12 and 15 years, more than a third of those who smoked cigarettes in the previous week had bought their own cigarettes (B Devenish-Meares *et al*, unpublished report).

Given the total refusal by specialist tobacconists and shops selling wines and spirits to make sales to children, there is a strong argument to suggest that the sales to children requirements may be enforced more effectively if the places at which tobacco was sold were restricted to these specialist outlets. Such a move would be in keeping with other restrictions on the sale of toxic or dangerous products, most obviously alcohol, but also poisons and prescription drugs, for whose sale the law imposes responsibilities in exchange for the right to sell these products. Though we acknowledge the political difficulties associated with removing cigarettes from retail outlets such as delicatessens, we note that these outlets show a significant failure to comply with their legal obligations.

In considering action to remedy this situation, it is important to acknowledge that there are considerable practical difficulties in enforcing the sales to children legislation.[14] Specifically, successful prosecution requires the evidence of an independent person, such as an adult actually present at the sale who is also sufficiently motivated to report the matter to the authorities. Prosecution is also time consuming and laborious, reflected by the fact that fewer than five prosecutions have been made in South Australia in the past five years (South Australia Health Commission, unpublished records).

Nearly two thirds of retail outlets displayed a sign warning that the sale of cigarettes to children was illegal, so that, by implication, these vendors must be aware of the legislation. Furthermore, purchase success was not related to whether vendors displayed the sign, clearly suggesting that awareness of the existing legislation is not a sufficient deterrent for retailers.

Several public health authorities in the United States have proposed elements of a "model law" to reduce the illegal sale of cigarettes to children.[15,16] Though some of these options may not be appropriate in an Australian context, others may be worthy of consideration. Some of these elements include: increased maximum penalties, in line with licensing provisions for wines and spirits (in South Australia, this would involve a 15-fold increase in the penalty); an increase in the legal age of purchase to at least 19 years, the intention being to make all secondary school attenders minors for the purpose of the age of sale law; banning cigarette vending machines; introducing the use of citations for breaches - that is, an expiation notice or "on the spot" fine, allowing the alleged offender to pay a specified sum of money to the enforcement agency in lieu of court proceedings; authorising use of a photo identification card by those aged 18 years or more which would be considered proof of age and could be required to be shown to vendors should they be unsure of the age of a purchaser; increasing the licence fee and using a proportion of it to fund the use of local government environmental health officers for increased surveillance and enforcement; and increased enforcement of the requirement to post an approved sign stating that sales to children are illegal.

Recent research on the prevention of smoking has been based on a developmental model of smoking acquisition, suggesting that young people can be classified into non-contemplators, contemplators, experimenters, occasional users, or regular users of tobacco.[17] Although very motivated children who wish to purchase tobacco will probably find some way to do so, it is reasonable to expect that an increased degree of difficulty in obtaining cigarettes may contribute to an interruption of this process among some children, making occasional use and eventual addiction less likely.[18] Indeed, studies of restrictive smoking policies in schools have suggested that by making smoking inconvenient, the probability of regular tobacco use is reduced as children age into adolescence[19,20] or is at least postponed until adulthood.[21] Furthermore, recent studies have documented a decrease in the rates of cigarette experimentation among adolescents after increased enforcement and more certain, harsher penalties for underage cigarette sales decreased the likelihood of children being able to purchase cigarettes.[22,23]

This study confirms the need to review existing means of preventing sales of cigarettes to children. Such a review is now timely, given the increasing prominence of point of sale tobacco advertising in Australia, as advertising and promotion through the mass media become restricted by other recent legislative controls. The extent of point of sale advertising can often limit the availability of space to adequately display mandatory signs about illegal sales of cigarettes to children.[24] Comprehensive approaches to preventing cigarette sales to children might also consider the need to limit point of sale advertising, so that tobacco control signage is made more salient.

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Translations of abstract

Les ventes illégales de cigarettes aux enfants en Australie du Sud

Melanie Wakefield *et al*

Résumé

Objectif: Vérifier s'il est facile pour des enfants de se procurer des cigarettes dans des magasins de détail et par des distributeurs automatiques en Australie du Sud.

Organisation: Dix enfants, agés de 12 à 14 ans, ont visité 98 établissements et se sont approchés de 29 distributeurs automatiques avec l'intention d'acheter des cigarettes.

Résultat recherché: Pourcentage de tentatives réussies d'achat de cigarettes.

Résultat obtenu: Les enfants sont parvenus à acheter des cigarettes dans pratiquement la moitié des établissements et auprès de tous les distributeurs automatiques, en dépit du fait que des avertissements rappelant l'interdiction de vente aux minours étaient affichés dans presque les 2/3 des établissements et sur les 3/4 des distributeurs.

Conclusion: Il est nécessaire de mettre en oeuvre des mesures beaucoup plus strictes de contrôle de la vente de cigarettes au détail afin d'empêcher les enfants d'en acheter facilement, contrairement à la situation actuelle en Australie du Sud.

Venta ilegal de cigarrillos a los niños en Australia Meridional

Melanie Wakefield *et al*

Resumen

Objetivo: Evaluar la facilidad con que los niños de Australia Meridional pueden adquirir cigarrillos en las tiendas al detalle y en los distribuidores automáticos.

Diseño: Diez niños de edades entre los 12 y los 14 años visitaron 98 tiendas y 29 distribuidores automáticos con el propósito de adquirir cigarrillos.

Principales evaluaciones obtenidas: Porcentaje de tentativas exitosas para adquirir cigarrillos.

Resultados: Los niños lograron comprar cigarrillos en casi la mitad de las tiendas y en todos los distribuidores automáticos. Esto ocurrió a pesar de que en aproximadamente dos tercios de las tiendas y en tres cuartos de los distribuidores automáticos había avisos que advertían sobre las ventas a menores.

Conclusión: Es necesario implantar controles más efectivos de las ventas al detalle para impedir la compra relativamente fácil de cigarrillos por los niños en Australia Meridional.

南澳大利亚的非法向未成年人出售卷烟的情况

马林．沃克菲尔德等

目标： 分析在澳大利亚儿童从零售店和自动售货机购买卷烟的容易程度。

设计： 10名12— 14岁的儿童到98个商店和29台自动售货机去买烟。

调查内容： 成功地买到烟的比例

结果： 儿童从几乎50%的商店中成功地买到烟，从自动售货机买到烟的比例是100%_

结论： 在南澳大利亚，应进一步加强卷烟零售的控制，使儿童不易买到烟。

（中国健康教育研究所烟草控制与疾病预防研究室 郑保义译）

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